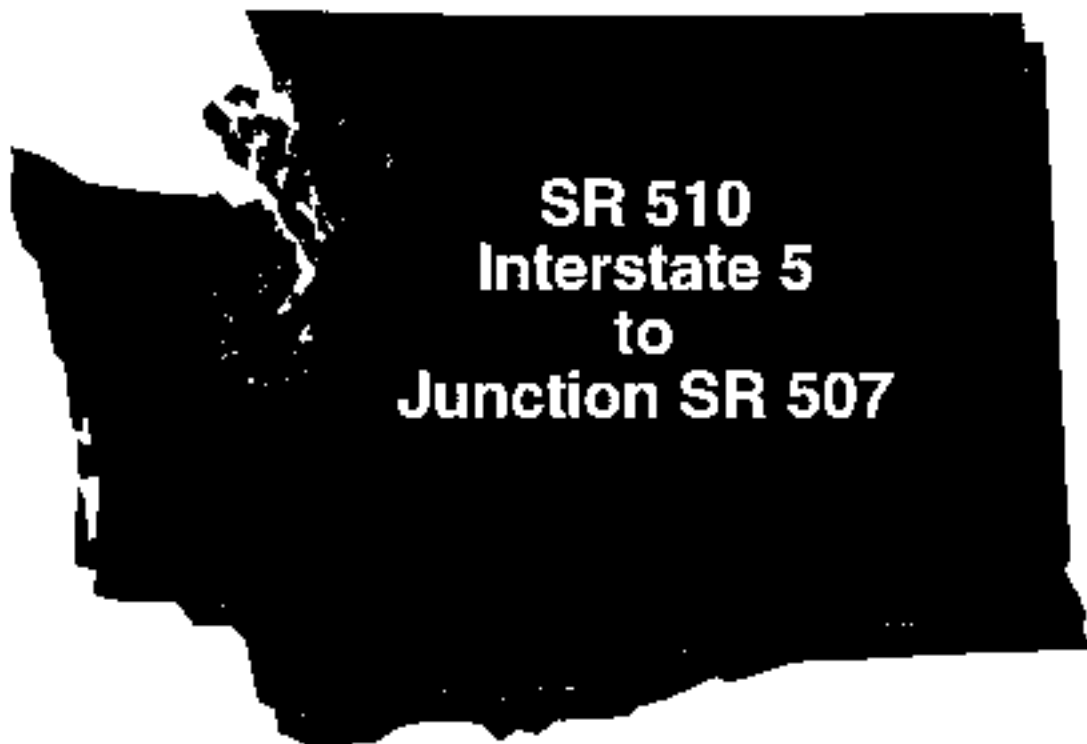


State Route 510 Route Development Plan



**Washington State
Department of Transportation**
Olympic Region

WASHINGTON STATE DEPARTMENT OF TRANSPORTATION
OLYMPIC REGION
TUMWATER, WASHINGTON

ROUTE DEVELOPMENT PLAN
STATE ROUTE 510
SR 5 INTERCHANGE TO SR 507
MP 0.00 TO MP 15.67

November 1997

GARY F. DEMICH, P.E.
REGION ADMINISTRATOR

ROBERT L. JONES
TRANSPORTATION PLANNING MANAGER

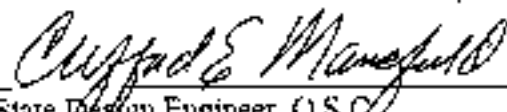
WASHINGTON STATE DEPARTMENT OF TRANSPORTATION
OLYMPIC REGION
ROUTE DEVELOPMENT PLAN
STATE ROUTE 510
SR 5 INTERCHANGE TO SR 507
MP 0.00 TO MP 15.67

Approved By:


Region Administrator, Olympic Region

Nov 13, 1997
Date

Concurrence:

for 
State Design Engineer, O.S.C.

11/19/97
Date

Concurrence:


Transportation Planning Office Manager, O.S.C.

11/17/97
Date

Summary of Steering Committee Recommendations

I-5 to Pacific Avenue

- Mobility improvements were not considered within this section since design work is currently underway. The present design calls for widening SR 510 to four lanes with a center left turn lane, channelization at major intersections, sidewalks and bike lanes.
- Revise the Access Management Plan Classification in this section between the Lacey City Limits and Pacific Avenue from Class 2 to Class 3.
- Use signal preemption for transit priority treatments.

Pacific Avenue to Old Pacific Highway

- Widen SR 510 by constructing one additional general purpose lane in each direction.
- Revise the Access Management Plan Classification from Class 2 to Class 3.
- Add median landscaping within Lacey Urban Growth Boundary.
- Install sidewalks and bike lanes.
- Use signal preemption for transit priority treatments.

Old Pacific Highway to Nisqually Reservation

- Widen SR 510 by constructing one additional general purpose lane in each direction separated by a divided Median.
- Add bike lanes.
- Realignment of Reservation Road so that it intersects SR 510 with the Yelm Highway.

Nisqually Reservation

- Widen SR 510 by constructing one additional general purpose lane in each direction separated by a divided Median.
- Add bike lanes and sidewalks.
- Recommend that a park and ride lot be established within the vicinity of the Nisqually Reservation.
- Consolidate the access within the Nisqually Reservation allowing for two channelized intersections.
- Revise Access Management Plan Classification from class 2 to class 3.

Nisqually Reservation to Yelm

- Widen SR 510 by constructing one additional general purpose lane in each direction separated by a divided Median.
- Add bike lanes.

Yelm

- The City of Yelm is developing plans for alternate routes both on the north (Y-3) and south (Y-2) of the city. The Steering committee recommends further evaluation of these concepts and does not recommend widening SR 510 within the City of Yelm.
- Install sidewalks and bike lanes.

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Executive Summary

Vision Statement

An efficient network of transportation facilities in the Puget Sound Region is vital to moving people and goods. Transportation affects us all--our lives and livelihoods depend a great deal on a transportation system that offers opportunities for various choices and modes of travel. To many extents our transportation facilities have been provided to meet the travel needs, but they were constructed to accommodate a population of the past.

In order to assure an efficient transportation system for the future, it is important to plan for the growth that continues to occur. This Route Development Plan (RDP) outlines a vision for the future development of State Route 510. It was created with the help of a Stakeholder Steering Committee and citizens who took an active interest in the transportation planning process. This Plan provides recommended improvement strategies to existing and future deficiencies of the transportation system in the SR 510 corridor. Some of the recommended improvements in this RDP, such as access management implementation, are critical to assure adequate operation of State Route 510 in the future.

The recommended improvements and goals for the future development of SR 510 were achieved through cooperative planning efforts and consensus with affected city, county, and regional agencies. The State Route 510 Steering Committee members provided valuable contributions in the development of this RDP. They shared with the committee their respective agency Comprehensive Plans and transportation goals, policies, and targeted highway improvement projects. Collectively, these Comprehensive Plans and the WSDOT *Highway System Plan* provided the impetus for what is recommended in this Route Development Plan.

Study Limits

The study limits of this RDP include all of State Route 510, beginning at the Interstate 5 interchange in the City of Lacey and ending at SR 507 in the City of Yelm. The milepost limits are from MP 0.00 to MP 15.67, however, due to milepost equations the overall length of SR 510 is 13.08 miles. At the time this RDP was developed, the section of SR 510 from I-5 to Pacific Avenue was being designed to provide additional capacity. Therefore, no capacity improvement recommendations are provided in this RDP for this section of the route.

Organization of this Report

This SR 510 Route Development Plan is organized by various topics. To begin with, Chapter 1 discusses the route location, its classifications and existing conditions such as highway alignment, right-of-way, and geometric cross sections.

Chapter 2 presents traffic and land use information. Highway operating Levels of Service (LOS) are summarized, and tables are provided that highlight existing and future LOS for highway segments.

Chapter 3 presents recommendations for highway improvements, Access Management Plan Classifications, Design Speeds, Traffic Signal locations and Non-Motorized transportation facilities.

Additional supporting information is contained in the appendices.

Stakeholder Involvement

A steering committee was formed to guide transportation decisions and reach a common vision on issues discussed in this RDP. This committee included representatives from city and county agencies, Fort Lewis, The Nisqually Tribe, and Intercity Transit.

WSDOT conducted two series of public open houses to solicit comments and present information to the public regarding this RDP. Additionally, a public opinion survey was conducted of 3000 users within the study limits of the SR 510 corridor.

Refer to Appendix A for further information about stakeholder and public involvement.

Route Development Plan Recommendations

The recommendations in this Route Development Plan represent the efforts of many discussions with local agencies and the public. To aid the steering committee in reaching consensus on issues such as mobility, access management, and highway safety improvements, many documents, including the current WSDOT *Highway System Plan*, March 1996 and the city and county comprehensive planning documents, were consulted. The WSDOT *Access Management Plan* classifications of SR 510 influence the type of roadway median sections proposed as part of the mobility recommendations.

Conclusion

Planning is an ongoing process and must be flexible in order to incorporate unforeseen trends. One of the goals of this plan is to integrate the Department of Transportation's needs with the needs of local transit authorities, cities, counties, regions, citizen groups, and the traveling public. It is believed that this plan along with a certain amount of flexibility will provide a well integrated transportation system for State Route 510.

When approved, this long range plan will provide guidance for development of the Olympic Region's program of projects as well as guiding the Region's Development Services Team in defining developer impact mitigation measures. The Washington State Department of Transportation would like to express its sincere appreciation to the individuals and local and regional agencies that took an active role in the development of this plan. WSDOT encourages these stakeholder agencies to refer to this consensus-based plan when updating their comprehensive planning documents. Final approval of the State Route 510 Route Development Plan will be issued by the WSDOT Olympic Region Administrator.

Chapter 1 Description of Existing Facility and Services

1.1 Highway Location and Route Overview

SR 510 begins at the interchange with Interstate 5 in the City of Lacey and ends at the junction of SR 507 in the City of Yelm. SR 510 is primarily a two lane facility with some channelized intersections.

From its beginning until leaving the City of Lacey, SR 510 travels south through an urban environment that is characterized by intermittent driveways from local businesses, signalized intersections, a center turn lane, and sidewalks. The posted speed limit through this section is 35 miles per hour.

From the Lacey City Limit until Pacific Avenue, SR 510 continues traveling south through a predominantly residential neighborhood. This section is characterized by a mixture of residential driveways, signalized and non-signalized intersections, two through lanes with left turn lanes at major intersections, narrow shoulders and no sidewalks. The posted speed limit through this section is 35 miles per hour.

At Pacific Avenue, SR 510 changes direction and travels southeast along the Old Pacific Highway until milepost 6.30 where it joins the St. Claire Cut-Off. Intersections and residential driveways are encountered within this section. The posted speed limit is 50 miles per hour.

From the Old Pacific Highway to the Yelm Highway, SR 510 travels along what is called the St. Claire Cut-off. This section is heavily forested and travels through rolling terrain. Roadway grades of up to 8.3% are present. Few driveways and no signalized intersections are present within this section. The posted speed limit is 50 miles per hour.

From the Yelm Highway to the city limits of Yelm, SR 510 travels on mostly level terrain and passes through the Nisqually Reservation and Fort Lewis Military Reservation. The roadside is forested with few driveways and non-signalized intersections. The posted speed limit through this section is 50-55 miles per hour.

From the Yelm city limits to SR 507, SR 510 again passes through an urban environment. Residential driveways and non-signalized intersections are prevalent within this section. The posted speed limit is 25-35 miles per hour.

1.2 Character of Traffic and the Local Network of Roads

SR 510 provides a primary traffic corridor for local traffic traveling between the cities of Lacey and Yelm. The development growth rate along this corridor in recent years has been relatively high, consisting mainly of new housing developments near Lacey and both commercial and residential development in and around Yelm. Traffic volumes along the route remain fairly consistent, with the highest traffic volumes encountered between I-5 and Pacific Avenue and between the Yelm Highway and Yelm.

Traffic volumes are anticipated to continue to grow at a steady rate. More highway improvements will be needed as more developments such as shopping centers, service centers, manufacturing, single and multi-family residences, and highway oriented businesses are established in the future.

In addition to SR 510, there are a number of other roadways that provide vital travel choices within this area of Thurston County. The Old Pacific Highway and Reservation Road both provide northern links to I-5 from SR 510. Meridian and Mullen Roads provide access to the southeast Lacey area from SR 510. The Yelm Highway intersects SR 510 and provides access to the south Tumwater area. SR 510 and SR 507 intersect within the City of Yelm. State Route 507 is a major traffic corridor that serves communities from the City of Centralia in Lewis County to SR 7 in Pierce County.

State Route 510
Route Development Plan
VICINITY MAP

KITSAP

Bremerton

PORT
ORCHARD

TACOMA

SHELTON

OLYMPIA

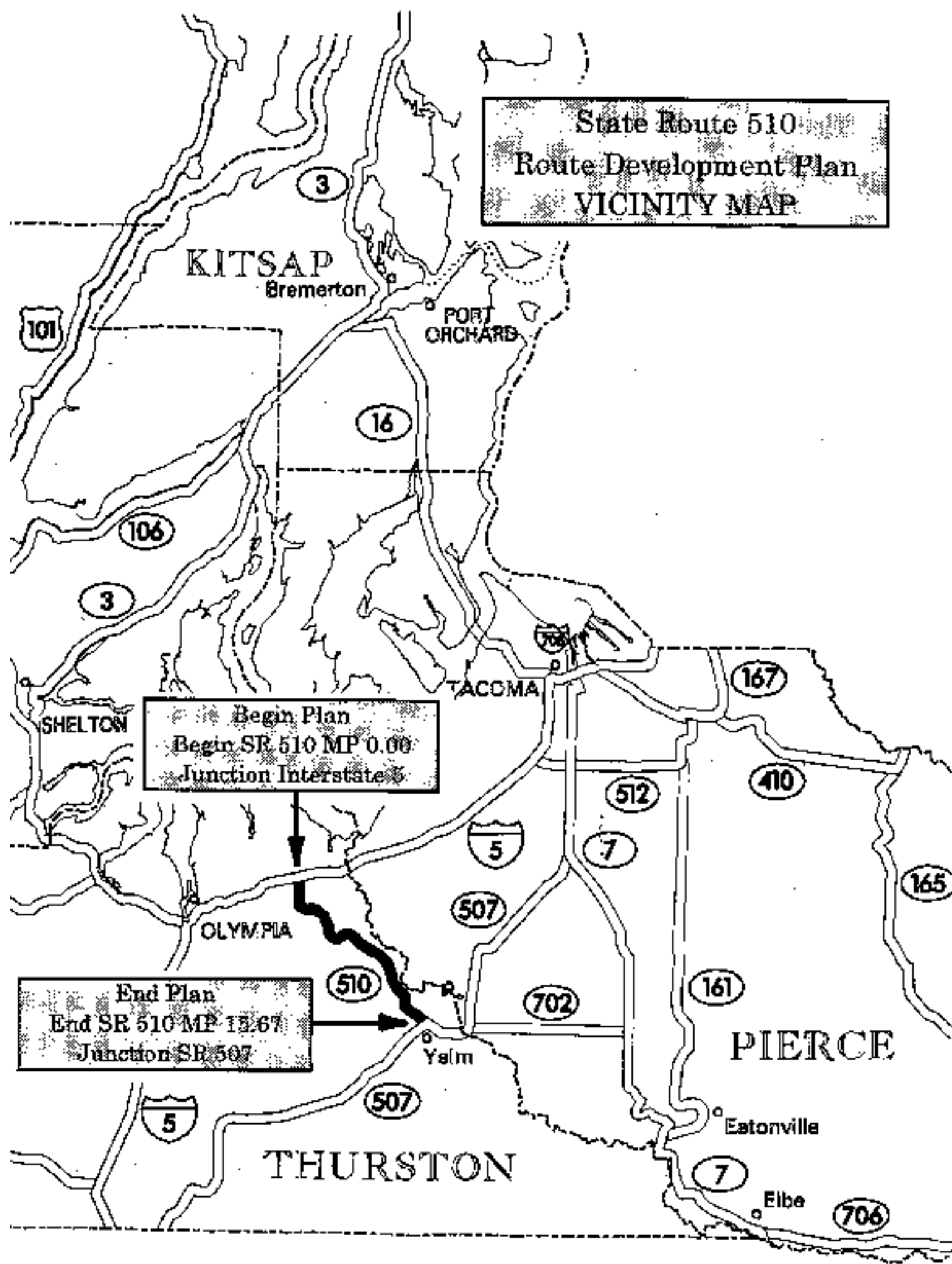
Yelm

PIERCE

THURSTON

Begin Plan
Begin SR 510 MP 0.00
Junction Interstate 5

End Plan
End SR 510 MP 15.67
Junction SR 507



1.3 Route Classifications

The following table summarizes the various State and Federal classification systems as they apply to SR 510.

Table 1.3-1 State Route 510 Classifications

Classification System	Location on SR 510 (Miles)	Classification
Federal Functional Class	0.00 to 4.28	Other Principal Arterial
	4.28 to 15.67	Minor Arterial
State Functional Class	0.00 to 6.96	Urban-Minor Arterial
	6.96 to 15.67	Rural-Minor Arterial
National Highway System Status	0.00 to 15.67	Not included in the National Highway System
Freight and Goods Transportation System Status	0.00 to 15.67	"T3" route meaning that 300,000 to 5,000,000 freight tons are transported over this route annually
Scenic and Recreational Highway System Status	0.00 to 15.67	Not designated by WSDOT as one of Washington's Scenic and Recreational Highways
Roadside Classification Plan	0.00 to 6.38	Semi-urban
	6.38 to 12.88	Rural
	12.88 to 14.39	Forest
	14.39 to 15.67	Semi-urban
Terrain	0.00 to 4.28	Level
	4.28 to 9.44	Rolling
	9.44 to 15.67	Level
Access Management Plan Classifications	See Section 1.4	

1.4 Access Management Plan Classifications

Background on the Access Management Plan

Access management is a technique for protecting the carrying capacity of highways and improving highway safety. It accomplishes these goals by minimizing disruptions to through traffic by eliminating unnecessary driveways and spacing them, managing the roadway median, spacing traffic signals, and managing turning traffic, as well as other measures.

The Washington State Legislature passed a law called "Highway Access Management", RCW, Chapter 47.50, in 1991. This law requires the WSDOT to develop two sets of rules. The first set creates an administrative application process for gaining access from private property to state highways and

establishes access permit fees. The second set establishes a set of five classifications for non-limited access highways.

Access is controlled in two ways: through the purchase of access rights or by managing it. A freeway is an example of a fully controlled, limited-access highway. Some highways are partially limited with access rights having been purchased for parts of the roadway, thereby restricting access but not limiting it to ramps as with freeways. Managing access is more flexible and may be less costly to taxpayers.

The five access management classifications that have been assigned to state highways reflect different highway environments. Factors that were considered in developing the classifications are: traffic volume, speed limit, adjacent land use, functional classification, and existing access density. Typical characteristics of the five classifications are provided at the end of this section.

Access Management on SR 510

The Steering Committee members reviewed the present *Access Management Plan (AMP)* classifications, its associated typical restrictions and the importance of practical access management for SR 510. Table 1.4-1 summarizes the existing *Access Management Plan Classifications* for State Route 510.

Table 1.4-1 WSDOT Access Management Plan

Section Description	Speed Limit	Land-Use	Current Access Classification
Lacey - Jct. SR 510 to Vic. Quinault Dr. NE Begin SR 510 (MP 0.00 to MP 0.15)	35	Commercial	Full Control
Lacey - Vic. Quinault Dr. NE to Lacey SCL (MP 0.15 to MP 2.85)	35	Commercial	Class 4
Lacey SCL to Old Pacific Highway (MP 2.85 to MP 6.48)	35/50	Residential/Forest /Commercial	Class 2
Old Pacific Highway to Yelm (MP 6.48 to MP 14.41)	50/55	Residential/Forest /Commercial	Class 2
Yelm - WCL to Cullens Street (MP 14.41 to MP 15.21)	35	Residential/ Commercial	Class 4
Yelm - Cullens Street to Jct. SR 507 (MP 15.21 to MP 15.67)	30	Commercial	Class 5

Source: WSDOT *Access Management Plan*

The following page provides a brief description of the characteristics of the five different access classifications in the *WSDOT Access Management Plan*.

ACCESS MANAGEMENT PLAN CLASSIFICATIONS - TYPICAL CHARACTERISTICS

CLASS 1 FACILITY

- High speed, high traffic volumes, long trips
- Median barrier typically used
- Planned intersection spacing = 1 mile
- Minimum private connection spacing = 1320 feet
- Private direct access to the state highway shall not be allowed except when the property has no other reasonable access to the general street system.

CLASS 2 FACILITY

- Medium to high speeds, medium to high traffic volumes, medium to long trips
- Median barrier typically used
- Planned intersection spacing = 1/2 mile
- Minimum private connection spacing = 660 feet
- Private direct access to the state highway shall not be allowed except when the property has no other reasonable access to the general street system.

CLASS 3 FACILITY

- Moderate speeds, moderate traffic volumes, short trips
- Balance between land access and mobility
- Median constructed of curbed asphalt or landscaped traffic islands
- A center two-way left-turn lane may be used as warranted
- Planned intersection spacing = 1/2 mile
- Minimum private connection spacing = 330 feet

CLASS 4 FACILITY

- Moderate speeds, moderate traffic volumes, short trips
- Balance between land access and mobility
- Two-way left-turn lane is typically used
- Planned intersection spacing = 1/2 mile
- Minimum private connection spacing = 250 feet

CLASS 5 FACILITY

- Low to moderate speeds, moderate to high traffic volumes, short trips
- Highest service to land access
- Planned intersection spacing = 1/4 mile
- Minimum private connection spacing = 125 feet

For additional information regarding the *WSDOT Access Management Plan*, consult Chapter 468-51 and 468-52 of the Washington Administrative Code (WAC) and Chapter 47.50 of the Revised Code of Washington (RCW). Some of this information has been provided in Appendix E of this document.

1.5 Existing Right-of-Way

The existing right-of-way along SR 510 is represented in Table 1.5-1 below. The dimensions stated are nominal values that do not include incidental changes in width (See WSDOT ROW plans for detailed dimensions). Typically, SR 510 has 30 feet of right-of-way each side of the highway centerline. This provides a 60 foot wide corridor, which is not enough space for constructing additional lanes recommended in Chapter 3 of this RDP.

Table 1.5-1 SR 510 Typical Existing Right-of-Way

Section Description	R/W Left of centerline (feet)	R/W Right of centerline (feet)
Jct. SR 5 I/C to Vic. Quinault Dr. NE MP 0.00 to MP 0.15	75 +	60 +
Quinault Dr. NE to Martin Way SE MP 0.15 to MP 2.62	30	40
Martin Way SE to Steilacoom Rd. MP 2.62 to MP 3.31	30	30
Steilacoom Rd. to Pacific Ave. MP 3.31 to MP 4.28	25	25
Pacific Ave. to Jct. SR 507 MP 4.28 to MP 16.67	30	30

Source: WSDOT ROW Plans

1.6 Existing Surface Geometrics

Information regarding the configuration of existing lanes and shoulders is provided in the following table. Descriptions include dimensions of lanes, shoulders, and sidewalks, and lane functions such as General Purpose (GP) and Two-way Left-turn Lane (TWLTL). There are no High Occupancy Vehicle (HOV) Lanes established or planned for State Route 510. Milepost locations are used to identify where significant changes occur, such as the number of existing lanes, or where any other significant change in the geometry occurs. The information is presented to represent the conditions along SR 510 in a general sense. For a thorough listing of all geometric conditions, refer to the most current WSDOT *State Highway Log*.

Table 1.6-1 SR 510 Existing Surface Geometrics

Section Description	Traffic Lanes (number of type & dimensions)	Shoulders & Sidewalks (dimensions)
Vic. SR 5 I/C MP 0.00 to MP 0.11	2 @ 12' through lanes	Concrete curb and bridge rail
Vic. SR 5 I/C to Quinalt Way MP 0.11 to MP 0.18	Southbound: 1 @ 12' through lanes 1 @ 12' left turn lane to Quinalt Way 1 @ 12' right turn lane to Quinalt Way Northbound: 1 @ 12' through lanes	Southbound: Curb with sidewalk Northbound: 5' paved shoulders
Vic. Quinalt Way to Vic. Shopping Center Entrance/Exit MP 0.18 to MP 0.37	2 @ 12' through lanes 1 @ 12' TWLTL	5' Paved shoulder on left. Est. 10' paved shoulder on right with concrete curb and sidewalk.
Vic. Shopping Center Entrance/Exit to Vic. Martin Way MP 0.37 to MP 2.62* *Equation 0.50 back - 2.62 ahead	2 @ 12' through lanes 1 @ 12' CLTL	6' Paved shoulder on left. Est. 10' paved shoulder on right with Concrete curb and sidewalk.
Vic. Martin Way to Vic. Lacey City Limits MP 2.62 to 2.83	1 @ 12' TWLTL Southbound: 1 @ 12' through lane 2 @ 12' through lanes MP 2.66 - 2.76 Northbound: 1 @ 12' through lane	6' Paved shoulder on left. Est. 10' paved shoulder on right with concrete curb and sidewalk.
Vic. Lacey City Limits to Vic. Pacific Ave MP 2.83 to MP 4.28* *Equation 3.82 back - 4.28 ahead	2 @ 11'-12' through lanes	2'-4' paved shoulders
Vic. Pacific Ave to Vic. Old Pacific Hwy. MP 4.28 to MP 6.30	2 @ 10'-11' through lanes	5'-8' paved shoulders
Vic. Old Pacific Hwy. to Vic. Rice St. MP 6.30 to MP 15.45	2 @ 11'-12' through lanes	4'-6' paved shoulders
Vic. Rice St. MP 15.45 to MP 15.52	2 @ 11' through lanes 1 10' CLTL	Left shoulder has curb right shoulder is 10' paved

Source: WSDOT State Highway Log, 1996

Table 1.6-1 Continued SR 510 Existing Surface Geometrics

Section Description	Installed Surface (number of type & dimensions)	Shoulders & Sidewalks (dimensions)
Vic. Rice St. to Vic. Edwards St. MP 15.52 to MP 15.55	2 @ 11.5 through lanes	Curb on left and right shoulders.
Vic. Edwards St. to Vic. RR Xing MP 15.55 to MP 15.65	2 @ 12' through lanes	10' paved shoulders with curb.
Vic. RR Xing to SR 507 MP 15.65 to MP 15.67	Eastbound: 1 @ 12' RTL 1 @ 12' through lane 1 @ 12' LTL Westbound: 1 @ 12' through lane	Curb on left and right shoulders

Source: WSDOT State Highway Log, 1996

1.7 Bridge and Structure Inventory

Information regarding existing bridges along SR 510 was provided by the WSDOT Bridge and Structures Office.

Table 1.7-1 SR 510 Bridge and Structure Inventory

Bridge Number Bridge Name Mile Post	Span Type	Length (feet)	Width (feet)	Year Built (rebuilt)
510 / 1 SR 5 O.C. Marvin Rd. MP 0.00	PCB	313	26	1967
510 / 9 BN RR OC (NP) MP 6.48	PCB	191	32	1970
510 / 10 BN RR OC (NP) MP 6.63	PCB	210	32	1970

Data Received from WSDOT Bridge and Structures Office, Bridge Planning and Technology Section.
PCB-Pre-Tensioned Concrete Beam

1.8 Existing Horizontal and Vertical Alignment

Using the data from the TRIPS system, the horizontal and vertical alignments of the subject area of this route development plan were examined. The vertical alignment grades range from flat to +8.31%. The minimum and maximum vertical curve lengths used are 200 ft and 800 ft. It is also important to note that the vertical alignment contains 25 angle points with the maximum difference in grades equal to 1.92%. For the horizontal alignment, the curve radii range from 573 ft to 3000 ft, with the lengths of curves ranging from 148 ft to 1197 ft. The horizontal alignment contains 7 angle points with the maximum central angle equal to 13°05'00". For a complete listing of this data, refer to the most current version of the *Horizontal and Vertical Alignment Report* from the WSDOT Trips System.

1.9 Existing Traffic Signals

The following table provides information relating to existing traffic signals on SR 510. Traffic Signals are further discussed in Chapter 3 of this document, where possible future signal locations are presented.

Table 1.9-1 SR 510 Existing Traffic Signal Locations

INTERSECTING STREET NAME	Left Right Both	SRMP	Speed Limit (MPH)	Distances to next Signal (miles)	Comments
On/Off Ramp SR5	L/R	0.11	35	0.07	
Qumault Way NE	B	0.18	35	0.19	
Shopping Center/ DNR	B	0.37	35	0.13	
Martin Way SE	B	2.62*	35	0.69	*Mile post equation 0.50 back - 2.62 ahead
Stellacoom RD SE	B	3.31	35	12.35*	*Mile post equation 13.64 back - 13.65 ahead
First St/SR 507	L/R	15.67	25		

1.10 Existing Bus Stops

The following tables provide information relating to existing Intercity Transit Bus Stops along SR 510. Bus Stops are further discussed in Chapter 3 of this RDP. Refer to Chapter 3 for proposed improvement strategies and locations.

Table 1.10-1 SR 510 Existing Bus Stops

Location SRMP	Left or Right	Shelter (Yes/No)	Location SRMP	Left or Right	Shelter (Yes/No)
0.20	L	Yes	5.00	L	No
0.22	R	No	5.24	L	No
0.39	L	No	10.03	R	No
2.74	R	Yes	10.04	L	No
2.74	L	No	12.89	R	No
2.90	R	No	12.94	L	No
2.90	L	No	14.39	L	No
3.20	L	No	14.53	L	No
3.22	R	No	14.55	R	No
3.56	L	No	15.15	L	No
3.75	L	No	15.51	L	Yes
4.48	L	No	15.53	R	No

2.1 Land Use and Zoning

The need for land use planning and regulation increases as the demands for housing, streets, commercial and public facilities grow in the Thurston County area. Zoning regulates the locations of land uses as a means of assuring that land uses are compatible to one another. Limitations are placed on the use of land to minimize impacts to neighboring properties. Zoning allows for control of densities in each zoning category, with the purpose of providing adequate facilities for such categories. Zoning ordinances are established to prescribe setbacks and minimum lot sizes and provide techniques to preserve and protect environmentally sensitive areas. The land use plan is a part of the comprehensive plan which is an official statement of the county or city policy establishing the direction it will follow as it develops and changes.

As Thurston County continues to grow at a steady pace, many transportation facilities in the region are experiencing an increase in travel demands, including State Route 510. There is a relation between land use and transportation. The existing and anticipated capacity vehicle travel demands along the highway relate to the steady growth in the region.

Land Use Relates to the Improvement Recommendations for SR 510

Information regarding present and future land use zoning along SR 510 was obtained from city and county comprehensive plans, provided by Steering members during the preparation of this Plan. The Steering Committee reviewed this land use information (including zoning maps and existing public and private intersecting roadways) as they worked together to create the highway improvement visions shown in Chapter 3. A common goal through their process was to create a vision for SR 510 that allows for continued movement of people, goods and services in the future, while still providing access to and from the highway. Maps of existing and proposed future land use zonings for areas along SR 510 are provided in Appendix G.

In addition to prescribing more traffic lanes, the recommendations include access management techniques like constructing medians to reduce turning conflicts and upholding some basic principles of access management such as the frequency and locations of properly planned road approaches. These strategies are key to balancing the needs of access on and off of the highway while keeping the expected high volume of travelers moving through the SR 510 corridor.

2.2 Traffic Data Collection and Analysis

In August and September, 1996, traffic counts were taken at various locations along the route from Lacey to Yelm. This provided the Steering Committee with current data regarding vehicle travel demand along SR 510. The *Highway Capacity Manual* and associated software were utilized to analyze traffic operations of highway segments and unsignalized intersections. In the analysis of highway segments, the traffic volumes and associated factors used were based on actual traffic counts. Projected future LOS was computed using growth rates provided by the Thurston Regional Planning Council (TRPC) travel forecast model. The model used was the TMODEL 2 (TDM 1) version 2.51 with a run date of 2/26/97.

2.3 Present and Future Traffic Conditions

The highway capacity segment analysis was performed to determine the operational levels of service of the existing traffic conditions on SR 510. Existing traffic conditions are based on 1996 traffic counts. Table 2.3-1 summarizes current and future level of service operating conditions. This table identifies operating levels of service with and without capacity improvements. Specific improvements are discussed in Chapter 3.

Level of Service Standards

Without any capacity improvements to the existing facility, the traffic operations on SR 510 will continue to deteriorate below acceptable standards. From the beginning of the route to Meridian Road (MP 6.95), the highway is within The City of Lacey's urban growth area. From Meridian Road to the end of SR 510 at MP 15.67, the highway travels through an area designated as rural. These urban and rural designations are important to WSDOT due to established Level of Service (LOS) objectives. For example, the Mobility Program of the WSDOT *Highway System Plan* states:

"Mitigate congestion on urban highways in cooperation with local and regional jurisdictions when the peak period level of service falls below Level of Service D. Provide uncongested conditions (Level of Service C) on rural highways."

It should be noted that the various city, county, and regional agencies who's jurisdiction State Route 510 travels through, have all established the same level of service objectives as the WSDOT.

The proposed widening improvements for the route, as discussed in Chapter 3 of this report, will improve the traffic operations of the highway segments and the signalized and unsignalized intersections, keeping the LOS within acceptable standards.

The following table shows the summary of the present and future operating conditions. The table identifies operating levels of service with and without improvements. The projected level of service for the section of SR 510 running through Yelm has not been determined. As mentioned previously in this report, the City of Yelm is currently analyzing ways to provide improved vehicle capacity in or around the city. At the time this RDP was prepared, the City was planning for the possibility of constructing bypasses to the north and south of Yelm Avenue and the central business district.

The RDP steering members support the construction of these bypasses as a way to improve vehicle circulation in and around Yelm. Therefore, this report does not address future level of service in Yelm.

Table 2.3-1 SR 510 Existing and Projected Levels of Service (By Highway Segment)

Segment Description	Urban or Rural	1996 ADT	1996 DHV	1996 LOS	2020 ADT	2020 DHV	2020 LOS w/o imp.	2020 LOS w/imp.
Pacific Ave to Rockcress Dr (MP 4.28 to MP 5.38)	Urban	9300	930	E	16000	1600	E	B
Rockcress Dr to Old Pacific Highway (MP 5.38 to MP 6.35)	Urban	7980	800	E	18600	1860	F	B
Old Pacific Highway to Meridian Rd (MP 6.30 to MP 6.95)	Urban	9050	910	E	20200	2020	F	A
Meridian Rd to Reservation Rd (MP 6.95 to MP 9.09)	Rural	5560	560	D	18100	1810	E	A
Reservation Rd to Yelm Highway (MP 9.09 to MP 9.44)	Rural	8070	810	E	27500	2750	F	B
Yelm Highway to She-Nah-Num Dr (MP 9.09 to MP 10.21)	Rural	10290	1030	D	28100	2810	F	B
She-Nah-Num Dr to Mud Run Rd (MP 10.21 to 13.50)	Rural	13600	1360	E	27900	2790	F	B
Mud Run Rd to SR 507 (end SR 510) (MP 13.50 to MP 15.67)	Rural	14520	1450	E	21100	2110	F	**

** No capacity improvements recommended within this section using existing alignment. See chapter 3.6 for recommendations regarding Yelm bypass concepts.

Chapter 3 Steering Committee Recommendations

This chapter presents a listing of recommended highway improvements. These recommendations are a result of the Steering Committee's input as well as information obtained from the public opinion surveys and public open houses (See Appendix A Public Involvement).

State Route 510 passes through several jurisdictions, and experiences character changes, such as different speed limits and classifications. Because of these differences, and the variations in how to provide future improvements, the Steering Committee recommendations for State Route 510 are presented according to these following route segments.

- **SR 5 to Pacific Avenue**
- **Pacific Avenue to Old Pacific Highway**
- **Old Pacific Highway to Nisqually Reservation**
- **Nisqually Reservation**
- **Nisqually Reservation to Yelm city limit**
- **City of Yelm**

3.1 Interstate 5 to Pacific Avenue Steering Committee Recommendations

This first section of SR 510 is 1.70 miles long. It begins at the SR 5 Interchange and ends at the intersection of Pacific Avenue and Marvin Road. The first 0.71 miles of this route segment is within the city limits of Lacey. At the time of the development of this Plan, this section of highway was currently in the design stage for improvements that would add an additional lane in each direction and a center two-way left-turn lane. **Due to this design process, no other capacity improvement recommendations are suggested in this Plan.**

Access Management

Revise the Access Management Plan

The Steering Committee recommends that the present *Access Management Plan* Class 2 designation be lowered to Class 3. This change should take place from the Lacey City Limit (MP 2.85) to the intersection with Old Pacific Highway. As presented in Chapter 1.4, a typical roadway section for a multi-lane Class 3 facility utilizes a restricted median design or a two-way left-turn lane if conditions warrant. It is the responsibility of the WSDOT to follow through with the process of changing the access management classification of this route segment per WAC 468-52.

Highway Safety and Recommended Design Speed

The street-like characteristics of this section, along with its closely spaced intersections and slower speed limit, make a design speed recommendation for this section unnecessary. It should be noted that the posted speed limit is currently 35 mph.

Safety issues on all state routes are addressed through the WSDOT's Safety Program (I-2). Chapter 3.11 offers a more detailed explanation of this program. In addition, the WSDOT's *Highway System Plan* contains a listing of the current 20 year safety improvement strategies for SR 510.

3.2 Pacific Avenue to Old Pacific Highway Steering Committee Recommendations

This segment of SR 510 is 2.07 miles in length. It begins at the intersection of Pacific Avenue and Marvin Road and ends at the intersection of Old Pacific Highway at milepost 6.35. This section falls within the City of Lacey Urban Growth Boundary.

Highway Capacity and Access Management

Create a Four Lane Facility with a Raised Median

To increase the capacity of this segment of SR 510, the Steering Committee recommends the construction of two additional general purpose lanes creating a four lane facility. In conjunction with this capacity improvement, a raised, landscaped median should be constructed. However, the WSDOT generally does not construct this type of median due to the added cost of the landscaping and the financial commitment it creates for its maintenance forces. If landscaping is included, an agreement should be made that identifies the City of Lacey as the agency responsible for the median maintenance. Along with the above proposals, the RDP Steering Committee recommends construction of curb, gutter and sidewalks (See section 3.10, Non-Motorized Facilities).

Full access intersections are recommended at Sitka St., Chatham Dr., Rockress Dr., and the Old Pacific Highway to allow left turn opportunities.

The Steering Committee also identified the need to emphasize Travel Demand Management (TDM) strategies such as encouraging people to walk, bicycle, carpool or use existing and future transit options to help offset the inevitable increase in traffic volumes along this segment of SR 510.

Revise the Access Management Plan

The Steering Committee recommends that the present *Access Management Plan* Class 2 designation be changed to Class 3. This revision will take place from the Lacey city limits to the Old Pacific Highway. This recommendation is based on Lacey land use and density plans in this Urban Growth Area through which SR 510 travels. It is the responsibility of the WSDOT to follow through with the process of changing the access management classification of this route segment per WAC 468-52.

The Steering Committee concurred that this section of SR 510, when widened, should receive a raised landscaped median. This median and roadway section will need to be designed to an adequate width to safely separate opposing vehicles and meet the requirements of the *City of Lacey Development Guidelines and Public Works Standards*.

As presented in Chapter 1.4, a typical roadway section for a multi-lane Class 3 facility utilizes a restricted median design as a positive means of separating opposing vehicles while providing some left turn accessibility. The intent of the restricted median application would be to confine left turning access to major public road intersections. This will reduce the number of possible turning vehicle conflicts and increase overall capacity, while balancing the needs to provide left turn access to abutting land.

Intersection traffic signal recommendations are presented in Section 3.8. A traffic signal is proposed for the Marvin Road / Pacific Avenue intersection.

Presently, SR 510 operates within a sixty foot right-of-way corridor. These recommendations would require additional right-of-way.

Non-Motorized Transportation

Construct Sidewalks and Bike Lanes

The Steering Committee agreed that this section should be improved for people who choose to travel as pedestrians or bicyclists. Construction of bicycle lanes and sidewalks is recommended by the Steering Committee and, in this case, required by the *City of Lacey Transportation Plan*.

Highway Safety and Recommended Design Speed

Future highway improvement projects will be designed according to WSDOT design standards, which are based in part on design speeds. As part of this Route Development Planning effort, WSDOT staff analyzed SR 510 in order to determine and recommend a design speed.

A design speed of 40 miles per hour is recommended for this section of highway that falls within the Urban Growth Boundary of Lacey. This design speed best fits the vision of ultimately adding lanes, sidewalks, and re-classing the Access Management designation as mentioned above. In addition, a Class 3 highway typically has posted speeds of 30-40 mph in urban areas. This design speed recommendation, in conjunction with the WSDOT Safety Program, will allow WSDOT design staff to address what the highway design standards should be.

Safety issues on all state routes are addressed through the WSDOT's Safety Program (I-2). Chapter 3.11 offers a more detailed explanation of this program. In addition, the WSDOT's *Highway System Plan* contains a listing of the current 20 year safety improvement strategies for SR 510.

Justifications for Recommendations

Highway Mobility and Access Management

The current Level of Service (based on 1996 data, Chapter 2) is LOS E. This is below the adopted standard of LOS D in Urban areas. With no capacity improvements, the future LOS will continue to deteriorate to a worse LOS E or F condition.

Since access to adjacent land use and approach roads effects the highway's ability to move people and goods, sound access management practices should be performed in order to maximize the public's investment in this state highway. Access management techniques can also increase highway safety by establishing vehicle turning locations.

Steering Committee Objectives and Alternatives

Objective statements and generic alternatives were developed by the Steering Committee to be used as the framework to arrive at recommendations relating to highway mobility, safety, transit, and travel demand management. Many of these objectives and alternatives will be measurably satisfied with completion of the Steering Committee recommendations. Appendix B contains a complete listing of these Steering Committee objective and alternative statements.

Public Opinion

The WSDOT, using the services of Pacific Rim Resources, conducted a public opinion survey to gain the public's opinion on the Steering Committee's proposed improvement strategies that were developed for State Route 510. Appendix A provides a detailed explanation of the public involvement process and this survey.

The survey asked the users of the route about their level of support for constructing one additional lane in each direction separated by a landscaped median, with access at major intersections for left turns and U-turns. Support for this approach was mixed, with 28% indicating that they are "Very Likely to Support", 29% indicating that they were "Somewhat Likely to Support", 16% indicating that they are "Somewhat Unlikely to Support" and 27% of respondents indicate that they are "Very Unlikely to Support" the approach.

3.3 Old Pacific Highway to Nisqually Reservation Steering Committee Recommendations

This section of SR 510 begins at the intersection of Old Pacific Avenue at milepost 6.35, in the vicinity of the Lacey Urban Growth Boundary, and continues 3.64 miles south through Thurston County to the Nisqually Reservation at approximately milepost 9.99.

Highway Capacity and Access Management

Create a Four Lane Facility with a Median

To increase the capacity of this segment of SR 510, the steering committee recommends the construction of one additional through lane each direction, creating a four lane highway. The Steering Committee feels that an essential part of this recommendation includes maintaining the Access Management Plan Class 2 designation and applying roadway designs that are compatible with that designation. This means that when the recommended additional lanes are constructed, a median barrier should also be provided to separate opposing lanes of travel.

The Intent of the Median Barrier

Based on the highway functional class, the expectations and projected volumes of users, and the Access Management Plan Class 2 designation, this section of SR 510 should continue to function as a high speed facility. There are several reasons for median barrier use on high speed, multi-lane highways. The intent of the median barrier as recommended here is to provide physical protection between opposing lanes of travel, reducing the likelihood of head-on collisions. Additionally, a median barrier along this segment of SR 510 will function to confine left turning access to major public road intersections where full access intersections will be provided to make turning or crossing maneuvers. By allowing several of these full access intersections, access to land uses will still be allowed, but to a more limited degree. It is important that the recommended additional lanes and median barrier are viewed as one strategy to allow increased flow of traffic through this section. This overall recommendation will limit the number of possible turning vehicle conflicts.

Probable Concerns Related to Placement of Median Barrier

Since this section of SR 510 is currently a two-lane highway, some motorists have undoubtedly become accustomed to making left turns onto and off of the highway, virtually anywhere they desire in this section, be it to a private driveway or to a county road, such as Mullen or Meridian Roads.

The implementation of the mobility and access recommendation will create great potential to alter this driver expectancy of turning opportunities. With the construction of another lane each direction, a noticeable change drivers will experience will be the inclusion of a median barrier, limiting their abilities to turn left except at a few recognized locations. This will cause frustration and inconvenience for some travelers, particularly those who need to access land use, such as residential developments along the route. The issue really becomes one of balancing land use and transportation plans so the two are compatible.

Several public and privately owned intersections fall within this section of SR 510, located between Old Pacific Highway and the Nisqually Reservation. These roadways primarily serve adjacent or nearby residential zoning in Thurston County, with some of the roads, being "dead ends" or "cul-de-sacs", relying entirely on the state highway system to provide access to and from these established low density land uses. It is important to mention here how these land use developments will be serviced in the future, especially after the mobility and access recommendations are implemented.

The following discussion introduces recommended concepts of providing circulation access to the specific *existing* public and private roadways that intersect SR 510 while still providing median barrier through this *Access Management Plan Class 2* section of SR 510- compromises are inevitable.

- **Old Pacific Highway MP 6.30 Left**
This high volume county road intersection should remain accessible to left and right turning vehicles once the highway is multi-laned. Presently this "wye" type intersection has three legs. It is at this location that the proposed median barrier will begin, in accordance with the *Access Management Plan Class 2* designation.
- **Meridian Road MP 6.92 Right**
This high volume county road "wye" intersection to the right should also remain "fully" accessible to vehicles turning left and right. This means that a full access median should be provided for SR 510 westbound (toward Lacey) vehicles turning left onto Meridian, and for Meridian Road traffic turning left onto the highway. The distance between this intersection and Old Pacific Highway intersection is acceptable, based on the one half mile or greater intersection spacing criteria found in the *Access Management Plan Class 2* description. In addition, it is recommended that Meridian Rd. be realigned to intersect with SR 510 slightly to the east (toward Yelm) in order to improve the sight distance at this intersection. Sufficient right of way currently exists to accomplish this improvement.

- **35th Lane SE** **MP 7.22 Left and Right**

This private roadway serves the residential development known as St. Claire Estates on the left and St. Claire Terrace on the right side of the highway. It is recommended that these developments not have a full access intersection. This means that 35th Lane should be reduced to right-in and right-out turning at the intersection with SR 510. The distance between this intersection and Meridian Road to the north is only 0.3 mile. Mullen Road lies only 0.42 miles to the south. Both of these distances fall short of the desirable minimum one half mile distance between intersections. The section of this development that falls on the right side of SR 510 does have reasonable access established to Meridian Road, meaning little inconvenience to drivers attempting access to 510. The part of St. Claire Estates on the left side of SR 510 is essentially a cul-de-sac development, with its only access point being 35th Lane at SR 510. This section of St. Claire Estates is low density development with approximately 14 planned residential lots. A recommended proposal to provide circulation to and from this development includes building a U-turn location at another location such as Mullen Road (road discussion below). If a U-turn location could not be provided at Mullen, then another less desirable option for motorists coming from Lacey wishing to access St. Claire Estates would be to exit right at Meridian. They then would travel Meridian to Mullen, turn left on Mullen, travel to SR 510 and turn left back onto SR 510. This "around-about" option would likely add 5 or 10 minutes to a motorist's travel time.

- **Mullen Road** **MP 7.64 Right**

This county road "tee" intersection should remain as a full access intersection for turning vehicles when the highway is multi-laned. It would also benefit the St. Claire Estates development if a U-turn location was provided at this intersection. These types of facilities can prove useful for drivers who need to turn around to gain access to right-in/right-out access private roadways, and 35th Lane seems to fit this circumstance. Design details would need to be worked out to realize specific geometric needs, such as median widths (Design Manual Figure 910-15) and right-of-way needs, but the option does seem reasonable.

- **Thornton Road SE MP 7.84 Right**
 This "dead end" county road falls very close to the intersection of Mullen Road. Due to this fact, it is recommended that this roadway should not be provided with a full access median. A field review of existing residential land uses accessed from Thornton Road revealed that approximately 26 residences are in place (based on a mailbox count). Many of these homes are located at the end of the road which leads to the north end of Lake St. Claire. It is not known how many of these homes are used year-round and how many are summer homes. It does appear that some undeveloped land lies along both sides of Thornton road, meaning that future increased land use here could increase the demand for access to Thornton Road. Without a full access median on SR 510 serving this intersection, other circulation options need to been considered. When developing options, it becomes necessary to think about both travel directions on SR 510.

- **Reservation Road SE MP 9.09 Left (propose MP 9.27)**
 The Steering Committee recommends realigning this county road further south, to intersect SR 510 at the same location as the Yelm Highway. This will reduce the number of conflict turning points and increase the distance between intersections, improving both highway safety and capacity. In addition, this will conform to the minimum of one half mile spacing for planned public intersections on a Class 2 roadway. This will mean that Reservation Road and Yelm Highway share a common intersection on SR 510 with a full access intersection provided for crossing or making left turns. This will require additional right-of-way to move this roadway. The needed land is known to be part of the Fort Lewis Military Reservation.

- **Yelm Highway MP 9.27 Right**
 Many motorists travel Yelm Highway to SR 510 and then cut off onto Reservation Road in their travels to Interstate 5. It makes good sense to create a four legged intersection at this location, by bringing Reservation Road south to this intersection. A full access intersection is proposed.

- **Miscellaneous Private Driveways (Various Locations Left and Right)**
Several private driveways fall within this section of SR 510, between Old Pacific Highway and the Nisqually Reservation. These long-established connections to SR 510 primarily serve individual residences, with one known exception being the Lakeside Industries gravel pit access near the top of St. Claire Hill (on the left side). These driveways will not have left turning access when the highway is multi-laned. Access at these locations will result in right-in and right-out turning only. A field review of the Lakeside Industries gravel pit area identified that a reasonable physical access is established, connecting the pit with Reservation Road. Originally, the Reservation Rd. was the primary access point for the Lakeside pit. In a 1991 5-year operational review by Thurston County, Lakeside requested the SR 510 access become their primary access since it was more suitable for truck traffic. This information was helpful in making the determination that this gravel pit roadway, like the other private driveways, should not have its own break in median access. Another point that should be made is that the Lakeside Industries private drive access intersects SR 510 in what appears to be a less than desirable location due to sight distance. While no physical measurements or calculations have been performed to prove this point, a field review seemed to point out that this driveway falls near the crest of the vertical curve, in addition to being on a horizontal curve.
- **Future Developments in this area of Thurston County will continue to be discouraged by WSDOT to connect to this Class 2 section of highway 510, especially if other reasonable connections can be made to existing County or other facilities. In other words, the planned full access intersections listed above are adequate. Any additional full access intersections will create too many short spaced barrier sections. This will not achieve the intent of the Access Management Plan and will also decrease highway safety by creating too many barrier ends (potential conflict points). It is suggested that the future developments in this area strive to connect with existing developments, creating a compatibility between land use and highway development needs.**

Encourage TDM Strategies

The Steering Committee also identified the need to emphasize travel demand management (TDM) strategies such as encouraging people to walk, bicycle, carpool or use existing and future transit options to help offset the inevitable increase in traffic volumes along this segment of SR 510.

Presently, SR 510 operates within a sixty foot right-of-way corridor. These recommendations would require additional right-of-way.

This section of SR 510 contains two Pre-Tensioned Concrete Beam bridges that would require widening to facilitate these recommendations.

Non-Motorized Transportation

The Steering Committee agreed that this section should be improved for people who choose to travel as pedestrians or bicyclists. Construction of bicycle lanes is recommended by the Steering Committee.

Highway Safety and Recommended Design Speed

Future highway improvement projects will be designed according to WSDOT design standards, which are based in part on design speeds. As part of this Route Development Planning effort, WSDOT Safety Management staff analyzed SR 510 in order to determine and recommend a design speed.

A design speed of 50 miles per hour is recommended for this section of highway running between the Urban Growth Boundary of Lacey and the Nisqually Reservation.

This design speed recommendation, in conjunction with the WSDOT Safety Program, will allow WSDOT design staff to address what the highway design standards should be.

Safety issues on all state routes are addressed through the WSDOT's Safety Program (I-2). Chapter 3.11 offers a more detailed explanation of this program. In addition, the WSDOT's *Highway System Plan* contains a listing of the current 20 year safety improvement strategies for SR 510.

Justifications for Improvement Recommendations

Highway Mobility and Access Management

State Route 510 is identified by the city, county and regional agencies as an important transportation artery providing a direct connection between the growing cities of Yelm and Lacey, as well as regional connections. It is important that this corridor function within the level of service standards adopted by the various agencies involved with preparing this Route Development Plan. This segment of highway is currently operating between a Level of Service D and E (based on 1996 data, Chapter 2). This is below the adopted standard of LOS C for rural areas. With no capacity improvements, the future LOS will continue to deteriorate to a worse LOS E or F condition.

When the recommended mobility and access management improvements are implemented the operating LOS of SR 510 in this segment will be within the adopted LOS standards.

Since access to adjacent land use and approach roads effects the highway traffic flow and ability to move people and goods due to entering and exiting turning traffic, practical access management practices should be included in order to maximize the public's investment in mobility through this corridor.

Steering Committee Objectives and Alternatives

Objective statements and generic alternatives were developed by the Steering Committee to be used as the framework to arrive at recommendations relating to highway mobility, safety, transit, and travel demand management. Many of these objectives and alternatives will be measurably satisfied with completion of the Steering Committee recommendations. Appendix B contains a complete listing of these objective and alternative statements.

Public Opinion

The WSDOT, using the services of Pacific Rim Resources, conducted a public opinion survey to gain the public's opinion on the Steering Committee's proposed improvement strategies that were developed for State Route 510. Appendix A provides a detailed explanation of the public involvement process and this survey.

The survey asked the user about their level of support for constructing one additional lane in each direction separated by a divided median, with full access at major intersections to allow left turns and turnarounds. Support for this approach is fairly strong, with 61% indicating that they are "Very Likely to support" and 21% indicating that they are "Somewhat Likely to Support".

3.4 Nisqually Reservation Steering Committee Recommendations

This segment of SR 510 is 0.94 miles in length. Its beginning at approximate milepost 9.99, and ending at approximate milepost 10.93 correspond to the limits of the Nisqually Reservation.

Highway Capacity and Access Management

To increase the capacity of this segment of SR 510, the Steering Committee recommended the construction of two additional general purpose lanes creating a four lane facility. In conjunction with this capacity improvement, a raised median should also be constructed. The Steering Committee recommends full access intersections to allow left turn opportunities at Muk-Sut-Wei Drive S.E. and She-Nah-Num Drive.

At the time this Route Development Plan was being prepared, the WSDOT Aberdeen Project Engineer office was working with the Tribe to develop left and right turn channelization design plans for both of these intersections.

The Steering Committee also identified the need to emphasize Travel Demand Management (TDM) strategies such as encouraging people to walk, bicycle, carpool or use existing and future transit options to help offset the inevitable increase in traffic volumes along this segment of SR 510.

The Steering Committee recommended that the present *Access Management Plan* Class 2 be lowered to a Class 3 designation. This change would take place within the limits of the Nisqually Reservation. It is the responsibility of the WSDOT to follow through with the process of changing the access management classification of this route segment per WAC 468-52.

As presented in Chapter 1.4, a typical roadway section for a multi-lane Class 3 facility utilizes a raised traffic island as a positive median design. The Steering Committee concurred that this section of SR 510, when widened, should receive a raised median to separate directions of travel. This median would need to be designed to an adequate width to safely separate opposing vehicles. The intent of the raised median application would be to confine left turning access to major public road intersections. This will reduce the number of possible turning vehicle conflicts and increase overall capacity, while balancing the needs to provide left turn access to abutting land.

Intersection traffic signal recommendations are presented in Section 3.8

Presently, SR 510 operates within a sixty foot right-of-way corridor. These recommendations would require additional right-of-way.

Non-Motorized Transportation

The Steering Committee agreed that this section should be improved for people who choose to travel as pedestrians or bicyclists. Construction of bicycle lanes and sidewalks are recommended by the Steering Committee.

Public Transportation

The Steering Committee recommends that a Park-and-Ride lot be established in the Nisqually Reservation vicinity.

Highway Safety and Recommended Design Speed

Future highway improvement projects will be designed according to WSDOT design standards, which are based in part on design speeds. As part of this Route Development Planning effort, WSDOT Safety Management staff analyzed SR 510 in order to determine and recommend a design speed.

A design speed of 40 miles per hour is recommended for this section of highway. This design speed best fits the vision of ultimately adding lanes, bicycle lanes and sidewalks, and re-classing the Access Management designation as mentioned above.

This design speed recommendation, in conjunction with the WSDOT Safety Program, will allow WSDOT design staff to address what the highway design standards should be.

Safety issues on all state routes are addressed through the WSDOT's Safety Program (I-2). Chapter 3.11 offers a more detailed explanation of this program. In addition, the WSDOT's *Highway System Plan* contains a listing of the current 20 year safety improvement strategies for SR 510.

Justifications

Highway Mobility

This segment of highway is currently operating at a Level of Service E (based on 1996 data, Chapter 2). This is below the adopted standard of LOS C for rural areas. With no capacity improvements, the future LOS will continue to deteriorate to a LOS F condition at or before year 2016.

Access Management

Since access to adjacent land use and approach roads effects the highway's ability to move people and goods, sound access management practices should also be performed in order to maximize the public's investment.

Steering Committee Objectives and Alternatives

Objective statements and generic alternatives were developed by the Steering Committee to be used as the framework to arrive at recommendations relating to highway mobility, safety, transit, and travel demand management. Many of these objectives and alternatives will be measurably satisfied with completion of the Steering Committee recommendations. Appendix B contains a complete listing of these objective and alternative statements.

Public Opinion

The WSDOT, using the services of Pacific Rim Resources, conducted a public opinion survey to gain the public's opinion on the steering committee's proposed improvement strategies that were developed for State Route 510. Appendix A provides a detailed explanation of the public involvement process and this survey.

The survey asked the user about their level of support for constructing one additional lane in each direction separated by a divided median, with full access at major intersections to allow left turns and turnarounds. Support for this approach is fairly strong, with 61% indicating that they are "Very Likely to support" and 21% indicating that they are "Somewhat Likely to Support".

Few respondents express an interest in using a Park and Ride lot near the Nisqually reservation. Those stating that they are "very Unlikely to use a Park and Ride here comprise 71% of the respondents, and 14% state that they are "Somewhat Unlikely " to use it. Only 6% indicated that they would be "very Likely" to use it while 10% indicate that they would be "Somewhat Likely" to use it. It should be noted that given the relatively large scale of private vehicle use to transit use, even a modest shift away from private ridership and toward additional public transit use could have a significant impact on gross public transit ridership levels.

3.5 Nisqually Reservation to Yelm City Limit Steering Committee Recommendations

This segment of SR 510 is 3.48 miles in length. Its begins at the end of the Nisqually Reservation approximate milepost 10.93, and ends at the Yelm City Limits at milepost 14.41.

Highway Capacity and Access Management

To increase the capacity of this segment of SR 510, the Steering Committee recommended the construction of two additional general purpose lanes, creating a four lane facility with opposing lanes separated by a concrete barrier. **Full access intersections are recommended to allow left turn opportunities to remain at the Fort Lewis tank crossing (mile post 11.79) and Southworth Elementary School.**

The Steering Committee also identified the need to emphasize Travel Demand Management (TDM) strategies such as encouraging people to walk, bicycle, carpool or use existing and future transit options to help offset the inevitable increase in traffic volumes along this segment of SR 510.

The Steering Committee concurred that the present *Access Management Plan* Class 2 designation is sensible for this section of SR 510. As presented in Chapter 2, a typical roadway section for a multi-lane Class 2 facility utilizes either a 40' median or concrete barrier as a positive median design. The Steering Committee recommended that this section of SR 510, when widened, should receive a median barrier to separate directions of travel. The intent of the barrier would not only be to provide positive protection for opposing vehicles but also to confine left turning access to major public road intersections. This will reduce the number of possible turning vehicle conflicts and increase overall capacity, while balancing the needs to provide left turn access to abutting land.

Intersection traffic signal recommendations are presented in Section 3.8.

Presently, SR 510 operates within a sixty foot right-of-way corridor. These recommendations would require additional right-of-way.

Non-Motorized Transportation

The Steering Committee agreed that this section should be improved for people who choose to travel as pedestrians or bicyclists. Construction of bicycle lanes is recommended by the Steering Committee.

Highway Safety and Recommended Design Speed

Future highway improvement projects will be designed according to WSDOT design standards, which are based in part on design speeds. As part of this Route Development Planning effort, WSDOT Safety Management staff analyzed SR 510 in order to determine and recommend a design speed.

A design speed of 60 miles per hour is recommended for the section of highway running south of the Nisqually Reservation to the vicinity of the Southworth Elementary School. Continuing south from this point the present speed limit is reduced, and thus a design speed of 50 miles per hour is recommended.

In Section 3.6, a discussion of the **Yelm Bypass** concepts is presented. These bypass alternatives need to be further developed, and they will influence recommendations in this plan, such as the design speeds, depending on where a possible future northerly Yelm bypass may connect to SR 510. As more details are decided in the future, this RDP will be updated as resources allow.

This design speed recommendation, in conjunction with the WSDOT Safety Program, will allow WSDOT design staff to address what the highway design standards should be.

Safety issues on all state routes are addressed through the WSDOT's Safety Program (I-2). Chapter 3.11 offers a more detailed explanation of this program. In addition, the WSDOT's *Highway System Plan* contains a listing of the current 20 year safety improvement strategies for SR 510.

Justifications

Highway Mobility

This segment of highway is currently operating at a Level of Service E (based on 1996 data, Chapter 2). This is below the adopted standard of LOS C for rural areas. With no capacity improvements, the future LOS will continue to deteriorate to a LOS F condition at or before year 2016.

Access Management

Since access to adjacent land use and approach roads affects the highway's ability to move people and goods, sound access management practices should also be performed in order to maximize the public's investment.

Steering Committee Objectives and Alternatives

Appendix B contains Objective Statements and Generic Alternatives that were developed by the Steering Committee to address issues relating to Mobility, Safety, and Public Transportation. Many of those objectives and alternatives will be satisfied with the completion of the above recommendations.

Public Opinion

The WSDOT, using the services of Pacific Rim Resources, conducted a public opinion survey to gain the public's opinion on the Steering Committee's proposed improvement strategies that were developed for State Route 510. Appendix A provides a detailed explanation of the public involvement process and this survey.

The survey asked the user about their level of support for constructing one additional lane in each direction separated by a divided median, with full access intersections to allow left turns and turnarounds. Support for this approach is fairly strong, with 61% indicating that they are "Very Likely to support" and 21% indicating that they are "Somewhat Likely to Support".

3.6 City of Yelm Steering Committee Recommendations

This segment of SR 510 is 1.26 miles in length. It begins at the Yelm City Limit at milepost 14.41 and ends at the junction of SR 507 at milepost 15.67.

SR 507 and SR 510 also known as Yelm Avenue through the City of Yelm, are currently the only arterial serving motorists traveling through the City. Yelm has been experiencing rapid growth for many years now with traffic volumes continually increasing. If no capacity improvements are made, this segment of the highway which is currently operating at a Level of Service E during peak hours will deteriorate to a LOS F at or before the year 2016.

The City of Yelm has been planning both a southern bypass route (Y-2 Alternative) and a northern bypass route (Y-3 Alternative) along with several other transportation improvements to help mitigate some of the congestion the City is currently experiencing. The Y-2 Alternative would direct through traffic on SR 507 in an easterly direction (South of Yelm's central business district). The Y-3 bypass would provide an alternative route north of Yelm for vehicles traveling between the Olympia/Lacey area and Pierce County. Presently, the Y-2 bypass would connect back with SR 507 in the vicinity of Grove Road which would be the approximate terminus of the northern bypass (Y-3). Both the Y-2 and Y-3 Alternatives are essential elements in mitigating the current and future congestion problems in Yelm.

Highway Capacity and Access Management

The Steering Committee recommends that the section of SR 510 within the city limit of Yelm not be improved with the construction of additional through lanes and that the Y-2 and Y-3 bypass concept receive further study as a means of reducing traffic congestion within this segment.

The Steering Committee also identified the need to emphasize Travel Demand Management (TDM) strategies such as encouraging people to walk, bicycle, carpool or use existing and future transit options to help offset the inevitable increase in traffic volumes along this segment of SR 510.

The Steering Committee concurred that the present *Access Management Plan* Class 4 and 5 designation are sensible for this section of SR 510. As presented in Chapter 1.4, a typical roadway section for a multi-lane Class 4 and 5 facilities utilizes a center two way left turn lane.

Non-Motorized Transportation

The Steering Committee agreed that this section should be improved for people who choose to travel as pedestrians or bicyclists. Construction of bicycle lanes and sidewalks are recommended by the Steering Committee.

Highway Safety and Recommended Design Speed

The "street-like" characteristics of this section with its closely spaced intersections and slower speed, make a design speed recommendation for this section unnecessary.

Safety issues on all state routes are addressed through the WSDOT's Safety Program (1-2). Chapter 3.11 offers a more detailed explanation of this program. In addition, the WSDOT's *Highway System Plan* contains a listing of the current 20 year safety improvement strategies for SR 510.

Justifications

Steering Committee Objectives and Alternatives

Appendix B contains Objective Statements and Generic Alternatives that were developed by the Steering Committee to address issues relating to Mobility, Safety, and Public Transportation. Many of those objectives and alternatives will be satisfied with the completion of the above recommendations.

Public Opinion

The WSDOT, using the services of Pacific Rim Resources, conducted a public opinion survey to gain the public's opinion on the Steering Committee's proposed improvement strategies that were developed for State Route 510. Appendix A provides a detailed explanation of the public involvement process and this survey.

Respondents familiar with SR 510 between the Yelm City Limit and SR 507 were asked how often they traveled on SR 510 through Yelm to northern designations such as McKenna or Roy. Responses indicated 30% of those that travel the route frequently and 39% of those who travel the route infrequently travel to destinations beyond Yelm.

3.7 Transportation Demand Management

Transportation demand management (TDM) contains a broad range of strategies intended to reduce and reshape the demand of the transportation system. Such strategies are often relatively low in cost. Their success depends both upon the active cooperation of the private sector, and upon affective decision making by the individuals who use the transportation system. System expansion for single occupancy vehicles is a last resort strategy. TDM measures can include:

- Carpool or vanpool formation assistance
- Encouraging people to walk or ride a bike
- Transit & Transit subsidies
- Worker-driver programs for buses and vanpools
- Passenger-only ferry systems
- Designated carpool or vanpool parking
- Parking restrictions - increased parking prices
- Work hour flexibility
- Telecommuting - Telework Programs

The Route Development Plan Steering Committee did not discuss this issue to the details necessary to prescribe recommendations. There are possibilities for effective TDM strategies along our state highways, SR 510 included. TDM strategies are typically not controlled by WSDOT, but are in the hands of the local and regional agencies and the private sector. WSDOT does encourage these agencies to move forward with plans to implement these "State Interest" strategies. Local and Regional Comprehensive and Transportation Plans were reviewed during the preparation of this RDP. It was found that many plans support strategies related to TDM.

3.8 Traffic Signal Recommendations

The Right Reasons for Stopping Traffic

After lesser forms of control have proven ineffective, traffic engineers will often review an intersection to determine if a traffic signal is warranted. The Department of Transportation traffic engineers follow specific, uniform guidelines to determine whether a traffic signal is called for. For example, they consider traffic volumes on the intersection approaches, the accident history, the number of other signals in the area and the effect a new signal will have on other streets in the vicinity. These criteria are critical in determining if a signal will have a positive effect on the safety and operational efficiency of an intersection.

Traffic signals impact highway mobility and highway safety and are often suggested as a cure for problems at intersections. They often control the operating level of service of a facility, often in a negative manner particularly if they are too closely spaced. Traffic signals can sometimes create a safer facility by reducing the severity of accidents at intersections. Traffic signals may be the solution to some specific traffic problems, such as stopping the heavy flow of traffic in one direction to permit crossing by minor movements which could not otherwise move safely through an intersection. Traffic signals help traffic move more smoothly and safely only if used in the proper situations.

One should recognize that unwarranted traffic signals can cause traffic to stop where it did not have to before. This can lead to more accidents and cause driver frustration, causing drivers to seek secondary, alternative roads. This can negatively impact the network of roadways, which may not have been developed to carry such travel demand.

State Route 510 Traffic Signal Vision

This section of the SR 510 RDP presents a "vision" for traffic signals along the highway. Table 3.8-1 at the end of this section identifies intersections along SR 510 that *should and should not* be considered for signalization in the future. This traffic signal location "vision" was developed with assistance from the Olympic Region Traffic Engineer and is subject to change.

Where a particular intersection is identified in Table 3.8-1 as a possible location for a traffic signal, it is important to realize that the "candidate" intersection will have to meet warrants, rank high, and prioritize well on a regional list to become eligible for a traffic signal in the future. Generally, intersections of county arterials or major/minor collectors will rank higher on the WSDOT Olympic Region Signal Priority List. Traffic signal needs created by private developments are generally not included on the Signal Priority List, but rather are handled as part of the development review process within the Developer Services group.

Traffic signal warrants have not been explored for all intersections along SR 510 as part of this Route Development Plan. However, the Olympic Region Traffic Office Signal Priority List (dated October, 1997 and subject to change) identifies two unsignalized intersections on SR 510 that meet some warrants. These intersections are SR 510 (Marvin Road) at Pacific Avenue and SR 510 at Meridian Road.

Table 3.8-1 will serve as a guide to the Olympic Region's Project Development staff when designing projects, and Development Services office when working with local developers or jurisdictions, by providing them with the vision for SR 510 as it relates to traffic signal locations.

Table 3.8-1 SR 510 Intersection Inventory and Traffic Signal Locations

Intersection (Street Name)	Left Right Both	State Route Milepost	Signal Location Yes/No	Possible Future Location Yes/No
Interstate 5 Northbound On/Off Ramps	B	0.11	Yes	Yes, Interchange Design
Quinault Way NE	B	0.18	Yes	Yes, Interchange Design
Shopping Center/ D.N.R	B	0.37	Yes	Retain
Martin Way SE	B	0.50 back = 2.62 ahead	Yes	Retain
SE 3rd Ave	B	2.93	No	No
Steilacoom Rd SE	B	3.31	Yes	Retain
8th Ave SE	L	3.57	No	No
9th Ave SE	L	3.77	No	No
Marvin Road & Pacific Avenue	B	3.82 Back = 4.28 Ahead	No	Yes*
Sitka St SE	L	4.51	No	No
Pacific Ridge Dr SE	R	5.01	No	No
Rockcress Dr SE	L	5.38	No	No
Old Pacific Hwy.	L	6.35	No	Yes**
Meridian Rd SE	R	6.93	No	Yes*
35 th Lane SE	B	7.22	No	No
Mullen Rd SE	R	7.64	No	No
Thornton Rd SE	R	7.84	No	No
Reservation Rd SE	L	9.09	No	(Realign Reservation Road to intersect at Yelm Hwy)
Yelm Hwy SE	R	9.27	No	Yes**
FT Lewis Military Rd	R	9.70	No	No
Muck Creek Dr SE	L	10.06	No	No
Nisqually Dr. SE	L	10.16	No	No
SHE-NAH-NUM Dr SE	L	10.21	No	No
MUK-SUT-WEI Dr SE	L	10.40	No	Yes**
Church Kalama Rd	L	10.74	No	No
Fort Lewis Military Rd	B	11.79	No	No

Table 3.8-1 (cont) SR 510 Intersection Inventory and Traffic Signal Locations

Intersection/ Street Name	Left/ Right/ Both	State Route Milepost	Existing Location Yes/No	Possible Future Location Yes/No
CO Rd	L	13.12	No	No
Anderson Ln	R	13.29	No	No
Mud Run Rd	L	13.50	No	No
89 th Ave SE	R	13.92	No	No
Burnett Rd	L	14.40	No	No
93 rd Ave SE	R	14.49	No	No
Sunrise Vista Rd SE	L	14.54	No	No
Yelm High School	R	14.61	No	No
Mt View Rd /Yelm High School	B	14.73	No	No
Killion Rd SE	L	15.05	No	No
Cullens St./Berry Valley Rd	L/R	15.20	No	No
Longmire St.	B	15.28	No	No
NW Solberg St./SW Solberg St.	L/R	15.37	No	No
Rice St.	R	15.45	No	No
NW Edwards St./SW Edwards St.	L/R	15.55	No	No
NW Railroad AVE/ SW Railroad AVE	L/R	15.60	No	No
First St./SR 507	L/R	15.67	Yes	Retain

Table 3.8-1 Notes:

Intersections identified as possible future signal locations are "candidate" locations for future signals as per the WSDOT Olympic Region Traffic Engineer and are subject to change.

*Location Included in WSDOT Signal Priority List (dated Oct. 1, 1997)

**Other Possible Signal Location.

3.9 Transit Services and Park & Ride Lots

Public Transit

Public transit services can have a positive affect on State Route 510 by reducing the volumes of general purpose vehicles. The cities, county, and regional transportation plans were reviewed to acknowledge any plans for future transit service to SR 510.

The following table provides information on Intercity Transit's plans for bus stop improvements along SR 510.

Table 3.9-1 SR 510 Planned Bus Stop Improvements

Stop ID	Street On	Street Across	Location	Adjacent Property	Comments
11700	SR 510	Sitka	NW		5' X 18' Pad or pullout
11690	SR 510	Madrona Park	NW	Madrona Park	Continue sidewalk 50' west or extend asphalt to wall
11710	SR 510	RV Station (opposite)	MB		5' X 18' Pad or pullout
23911	SR 510	Muck Creek Dr.	NE	Nisqually DNR (Opposite)	Pullout
23910	SR 510	Muck Creek Dr.	MB	Nisqually DNR	Pullout
23921	SR 510	Church Kalama Rd	NW	fireworks stand	Pullout
23920	SR 510	Church Kalama Rd (opposite)	MB	Woods	Pullout
23161	SR 510	Southworth Elementary (Opposite)	NE	Trinity Place	5' X 14' Pad or pullout
23931	SR 510	Mudd Run Rd	NE	Vacant land	5' X 14' Pad or pullout
23930	SR 510	Mudd Run Rd (opposite)	MB	Vacant land	5' X 14' Pad or pullout
23941	SR 510	Burnett Rd	NE	Vacant land	5' X 14' Pad or pullout
23940	SR 510	Burnett Rd (opposite)	MB		5' X 14' Pad or pullout
23960	SR 510 (Yelm Ave)			Atwood Auto	5' X 8' pad - Culvert

NW = Northwest, NE = Northeast, MB = Mid-block. 5' X 14' pad ideal, could be smaller
Information provided by Intercity Transit

Table 3.9-1 (continued) SR 510 Planned Bus Stop Improvements

Stop ID	Street On	Street Across	Comments	Property	Comments
	SR 510 (Yelm Ave)	Mountain View		Moose	None
23950	SR 510 (Yelm Ave)	Berry Valley Rd		Yelm Home Center	Move to Mac Donalds
23970	SR 510 (Yelm Ave)	Edwards St		Lions Club	3' X 5' pad in parkway
23980	SR 510 (Yelm Ave)	Yelm Ave		#224 (opposite)	3' X 5' pad in parkway
24110	103 rd St NE	SR 510 (Yelm Ave)		Texaco	8' X 5' Pad + culvert
23981	SR 510 (Yelm Ave)	3 rd St SE		Masonic Lodge	7' X 5' pad
23971	SR 510 (Yelm Ave)	Edwards St		Yelm Middle School	None
23951	SR 510 (Yelm Ave)	Cullens Rd		Yelm professional	3' X 5' pad at sidewalk
	SR 510 (Yelm Ave)	Mountain View		Veterinary	8' X 5' pad
23961	SR 510 (Yelm Ave)			Pizza Depot	6' X 5' pad + culvert

NW = Northwest, NE = Northeast, MB = Mid-block, 5' X 14' pad ideal, could be smaller
 Information provided by Intercity Transit

Park and Ride Lots

The Steering committee recommended that a Park and Ride lot be constructed in the Nisqually Reservation vicinity and in the City of Yelm.

A park-and-ride study prepared for Intercity Transit by JHK & Associates in 1995 contains recommendations for several new potential locations of park-and-ride facilities by the year 2000. These locations include 58 spaces in the City of Yelm. The 1992 draft *Thurston Regional Transportation Plan* also shows the need for park-and-ride facilities in Yelm. Intercity transit is currently applying for a grant to study possible locations for a park-and-ride facility in the City of Yelm.

Intercity Transit has obtained a grant to identify and develop alternative locations for a park-and-ride lot and transit center to replace the existing park-and-ride lot on SR 510 at Hawks Prairie. The existing park-and-ride lot is situated on a lot that is currently being leased from the Department of Natural Resources. That agency has determined that it will not renew the lease when it expires in the year 2000. In addition, the design work that is currently being performed by the WSDOT for this segment of SR 510 between the SR 5 Interchange and the intersection of Pacific Avenue and Marvin Road would add an additional lane in each direction with a center two way left turn lane. However, this widening is expected to eliminate about 30 stalls of this heavily used park-and-ride lot.

3.10 Non-motorized Facilities

The Route Development Steering Committee discussed the needs of non-motorized travelers such as pedestrians and bicyclists. What resulted was a list of recommended improvements to State Route 510 such as bike lanes and sidewalks. These types of improvements would likely occur during mobility or safety improvement projects, however they have been listed separately in this RDP for convenience (see sections 3.1 through 3.6).

State Route 510 is listed as a designated bicycle touring route in the *Thurston County Comprehensive Plan 1995*.

3.11 Highway Safety

Highway safety is a very important issue for all state routes, and WSDOT addresses this issue throughout all programs, including such areas as Maintenance, Preservation, Improvements, and Traffic Operations. Here are a few examples, taken from WSDOT's *Highway System Plan*, of specific Service Objectives and Action Strategies that address Highway Safety:

Maintain state highways on a daily basis to ensure safe...movement of people and goods:

- Provide safe winter travel on highways that remain open to the public.
- Provide safe, reliable roadway surfaces through pavement patching, sealing, and surface treatments.
- Maintain visibility of traffic control and safety devices.
- Manage roadside vegetation to meet safety, aesthetic, and regulatory requirements.
- Keep existing structures safe and dependable.

Operate the highway transportation system safely and efficiently:

- Increase highway efficiency and safety through full utilization of the existing system.
- Improve arterial efficiency and safety through traffic signal timing and coordination efforts.
- Perform safety and efficiency investigations in response to constituent concerns to identify small cost operational enhancement opportunities.
- Develop and implement small cost, immediate solutions to address identified operational, safety, and efficiency concerns.

Preserve the highway infrastructure cost effectively to protect the public investment:

- Repave highways at regular intervals to minimize long-term costs. Restore existing safety features.

Provide the safest possible highways within available resources:

- Improve highway sections that have a high accident history.
- Improve roadways where geometrics, traffic volumes, and speed limits indicate a high accident potential.
- Eliminate major at-grade intersections on multi-lane highways with speed limits of 45 mph or higher.
- Construct intersection channelization, signals, or both when traffic volume warrants (thresholds) are met.

One function of the Route Development Planning process is to provide an opportunity for WSDOT staff to gather data that can support the various ways in which WSDOT addresses highway safety. The Route Development Plan does not make recommendations on specific highway safety improvements. That function is already provided within the WSDOT Program, in reference to the examples listed above, and through standards that are applied to many types of work that WSDOT performs on state highways. For specific highway safety improvement strategies currently identified over a 20-year projection on SR 510, please see the current WSDOT *Highway System Plan*.

One specific safety recommendation that the Route Development Plan makes is on design speed. Design speed is defined as the maximum safe maintainable speed over a specific section of highway, when conditions are so favorable that the design features of the highway govern the maximum safe speed. Recommendations on design speed are based principally on terrain, type of highway, traffic volumes, as well as economic factors. Design speed will assist WSDOT in applying appropriate safety standards (for maintenance, preservation, improvements, traffic operations, etc.) such as vertical and horizontal alignment, and sight distance. Design speed recommendations are presented in sections 3.1 through 3.6.

A.1 The Steering Committee

A steering committee was formed to assist the WSDOT Olympic Region Planning Office in the route development planning process. The steering committee was comprised of representatives from the City of Lacey, InterCity Transit, City of Yelm, Nisqually Tribe, Thurston County, Thurston Regional Planning Council, Fort Lewis, and the WSDOT Olympic Region Planning and Design Offices.

The Steering Committee provided valuable input to the process, through a series of meetings, ultimately resulting in this "consensus-based" Route Development Plan. In addition to providing their respective agency's long range plans as they related to SR 510, the Committee established a set of Objective and Generic Alternative Statements (see Appendix B) that was used to identify issues and areas of improvement.

A.2 Agency Comprehensive Plans

The transportation and land use elements of the comprehensive plans of the City of Lacey, the City of Yelm, and Thurston County were reviewed and compared to each other and to the WSDOT System Plan for concurrence. It was noted that the various comprehensive plans and the WSDOT System Plan target common goals and objectives. The Steering Committee had taken into consideration the local and regional transportation plans when strategies were proposed to improve the route corridor.

A.3 Public Open Houses

A series of two informal Public Open Houses were held in Yelm and at the Nisqually Reservation. During the first series, basic improvement concepts were presented and public input was requested. During the second series, the Steering Committee recommendations were presented and final public comment was solicited.

A.4 Public and Agency Meetings

The following table summarizes the meetings that took place regarding the Route Development Plan for State Route 510.

SR 510 Route Development Plan Meetings Summary

MEETING	DATE	LOCATION	ATTENDEES
1st Steering Committee Meeting	12/10/96	Thurston Regional Planning Council Tumwater, WA	Thurston Regional Planning Council Thurston County Traffic City of Yelm City of Lacey Nisqually Tribe Intercity Transit Fort Lewis Public Works WSDOT Olympic Region Planning WSDOT Olympic Region Design
Focus Meeting: Military Issues SR 507 and 510	1/14/97	Fort Lewis Public Works, Fort Lewis	Fort Lewis Public Works WSDOT Planning
WSDOT Olympic Region, Project Development Multi-Route: SR's 160, 507, 510	02/07/97	WSDOT Olympic Region Planning Conference Room Tumwater, WA	WSDOT Olympic Region Planning WSDOT Olympic Region Project Development
Transit Action Meeting	02/11/97	WSDOT Olympic Region Tumwater, WA	Intercity Transit WSDOT Olympic Region Planning
Travel Demand Multi-Route: SR's 160, 507, 510	02/14/97	TRPC Tumwater, WA	Thurston Regional Planning Council WSDOT Olympic Region Planning WSDOT Olympic Region Design
Yelm Bypass Alternatives	02/21/97	Prairie Motel Boardroom Yelm, WA	City of Yelm SCA Engineering Parametrix, Inc.
2nd Steering Committee Meeting	02/25/97	Lacey City Hall Lacey, WA	Thurston Regional Planning Council City of Yelm City of Lacey Intercity Transit Thurston County Traffic Fort Lewis Public Works WSDOT Olympic Region Planning
Open House	3/27/97	Yelm City Hall Yelm, WA	Open to the public
Open House	4/2/97	Nisqually Tribal Center Nisqually Reservation	Open to the public

SR 510 Route Development Plan Meetings Summary Continued

MEETING TOPIC	DATE	LOCATION	ATTENDEES
3rd Steering Committee Meeting	4/10/97	Lacey City Hall Lacey, WA	Thurston Regional Planning Council City of Yelm City of Lacey Intercity Transit Thurston County Traffic WSDOT Olympic Region Design WSDOT Olympic Region Planning
4th Steering Committee Meeting	5/28/97	Lacey City Hall Lacey, WA	WSDOT Olympic Region Planning Thurston Regional Planning Council City of Yelm City of Lacey Intercity Transit Thurston County Traffic Port Lewis Public Works Nisqually Tribe
Traffic Issues	5/7/97	WSDOT Planning Office	WSDOT Planning WSDOT Traffic
Open House	7/22/97	Nisqually Tribal Center Nisqually Reservation	Open to the public
Draft RDP Presentation	7/28/97	WSDOT Olympic Region Boardroom	Olympic Region Staff Olympia Service Center Staff
Open House	7/29/97	Yelm City Hall Yelm, WA	Open to the public

A.5 Public Opinion Surveys

Two public opinion surveys were conducted as part of this Route Development Plan. These surveys were developed and approved with input from the Steering Committee members. The first survey asked general questions about SR 510. The results of that survey and the recommended improvement strategies developed by the Steering Committee for SR 510 were used to develop a second survey directed towards the actual users of the highway.

The first survey, conducted in March and April 1997, was distributed to 117 people attending the public open houses held at the City of Yelm and Nisqually Tribal Center. Of those, 117 surveys, a total of 72 surveys were completed and returned.

The second public opinion survey was conducted using the services of Pacific Rim Resources. This survey was developed to gain the public's opinion on the steering committee's proposed improvement strategies that were developed for State Route 510. To reach the actual users of SR 510, 2,700 vehicle license plate numbers were collected at various locations along the route by WSDOT staff on March 20th and 24th 1997. The second public opinion survey was then mailed to the owners of these vehicles.

Included here on the following pages for informational purposes is the *SR 510 Public Opinion Survey and Results*.

Washington State Department of Transportation Opinion Survey

State Route 510

WE WOULD LIKE TO HEAR FROM YOU...

Dear Resident:

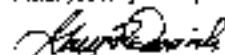
The Washington State Department of Transportation needs your input. We are researching public opinion on the state of traffic on and around State Route 510 (SR510), and possible strategies for addressing traffic concerns. Your responses to this questionnaire will help us to better understand public opinion about potential improvements.

The Department of Transportation collected license plate numbers from vehicles using SR 510 in March, 1997 in order to contact unique users of this route to provide us with comments.

Please take a few minutes to complete and return this postage-paid questionnaire. Your confidential response will then be combined with those of other respondents and never associated with your name.

Remember, your responses are important. You are one of a small sample of travelers selected to receive this questionnaire. Even if you rarely use SR 510, it's important that we hear from you.

Thank you for your help. Sincerely,



Gary Demich
WSDOT Olympia Region Administrator

Thank you for completing this questionnaire. When you have completed it, please fold it to display the business reply address, secure it with tape and mail it back to the Department of Transportation within one week. No postage is necessary.

Q1 Please enter your home zip code: _____

Q2 How often do you travel on SR 510 (Please count each one-way trip separately, and check one only):

- ☐ Less than once a week
- ☐ 1 to 2 times per week
- ☐ 3 to 5 times per week
- ☐ 5 to 6 times per week
- ☐ More than 6 times per week

Q3 What modes of transportation do you typically use on SR 510?

- ☐ Car or pickup truck
- ☐ Commercial vehicle
- ☐ Public Transit
- ☐ Bicycle or Walk

Q4 Please indicate your typical destination (other than home):

- ☐ Yes
- ☐ Lacey/Olympia
- ☐ Tumwater
- ☐ Other (Please write the destination: _____)

Q5 What is your primary reason for using the highway?

- ☐ Commuting to and from work or school
- ☐ Shopping and other errands
- ☐ Other (please indicate) _____

Q6 How important is it to address the following traffic issues related to 510? Please circle how you rate the issues from '1' to '4', where '1' is 'Not Important' and '4' is 'Very Important.'

	Not Important		Very Important	
	1	2	3	4
Congestion on 510	1	2	3	4
Congestion accessing SR 510 from adjoining streets	1	2	3	4
Safety on 510	1	2	3	4
Safety on access streets	1	2	3	4
Safety for walkers, cyclists	1	2	3	4

What is the most important traffic issue to address on or around SR 510? (please specify): _____

The following questions refer to the section of SR 510 running between Pacific Avenue and the Old Pacific Highway. If you are not familiar with this section of highway, please skip to Question 10.

There are several strategies being proposed to solve some of the concerns along this section of SR 510. Please indicate how likely you would be to support each strategy.

Q7 Having two lanes in each direction with a center left-turn lane:

- ☐ Very likely
- ☐ Somewhat likely
- ☐ Somewhat unlikely
- ☐ Very unlikely

- Q8 Two lanes in each direction separated by a landscaped median, with openings at major intersections for turn and turnarounds:

☐ Very likely
☐ Somewhat likely
☐ Somewhat unlikely
☐ Very unlikely

- Q9 Provide sidewalks and bike lanes for pedestrian and cyclists:

☐ Very likely
☐ Somewhat likely
☐ Somewhat unlikely
☐ Very unlikely

Questions 10 through 12 refer to the section of SR 510 running between The Old Pacific Highway and the Yelm city limits. If you are not familiar with this section of highway, please skip to Question 13.

There are several strategies being proposed to solve some of the concerns along this section of SR 510. Please indicate how likely you would be to support each of these strategies:

- Q10 Construction of one additional lane in each direction with a divided median, with openings at major intersections to allow left turns and turnarounds:

☐ Very likely
☐ Somewhat likely
☐ Somewhat unlikely
☐ Very unlikely

- Q11 A proposed strategy to encourage less use of composting and instead is to construct a park and ride lot near the Misquah Reservation. How likely would you be to use this facility?

☐ Very likely
☐ Somewhat likely
☐ Somewhat unlikely
☐ Very unlikely

The following questions refer to the section of SR 510 between the Yelm city limits and SR 507. If you are not familiar with this section of highway, please skip this portion of the survey.

- Q12 How often do you use SR 510 traveling through Yelm to other destinations to the north, such as McKenna or Roy?

☐ Less than once a week
☐ 1 to 2 times per week
☐ 3 to 5 times per week
☐ More than 5 times per week

- Q13 How often do you use SR 510 traveling through Yelm to other destinations to the south, such as Rainier or Tonino?

☐ Less than once a week
☐ 1 to 2 times per week
☐ 3 to 5 times per week
☐ More than 5 times per week

- Q14 An option to solve some of the concerns about SR 510 within this section is to construct a by-pass running north of the city. How likely would you be to support this proposed option?

☐ Very likely
☐ Somewhat likely
☐ Somewhat unlikely
☐ Very unlikely

- Q15 If a by-pass running north of Yelm was constructed, how likely would you be to use it as an alternate route?

☐ Very likely
☐ Somewhat likely
☐ Somewhat unlikely
☐ Very unlikely

PLEASE RETURN AT THIS TIME AND SEAL

11/1/97 11:14 AM

PACIFIC RIM RESOURCES

Public Affairs and Communications

Washington State
Department of Transportation

**Transportation Survey Results
State Route 510**

28 July 1997

Prepared by
Pacific Rim Resources

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STATE ROUTE 510 TRANSPORTATION SURVEY

EXECUTIVE SUMMARY AND IMPLICATIONS

Introduction

This report summarizes data gathered through a survey conducted between June 12 and June 25, 1997 with users of Washington State Route 510 ("SR510"). Self-administered surveys were sent to the residences of actual users of this State Route. Users were identified by matching license plate numbers of cars traveling along the route corridor in March of 1997 with the names and addresses of registered vehicle owners. The survey was sent to 2,587 people identified as users of SR510.

A total of 296 completed surveys were returned over a two-week period, for a 11.2% response rate.

This survey process is part of a public involvement program being conducted by the Washington State Department of Transportation Olympic Region to get feedback from the public for a corridor planning effort underway. In addition to these surveys, the Department has been guided by the input of an interjurisdictional steering committee and a series of community open houses to familiarize residents and businesses with the purposes of the Corridor Planning effort.

Organization of this Report

This Executive Summary is structured so that it can serve as a stand-alone report and as an introduction to the full report. As such, it includes a summary of data implications and a brief overview of the corridor.

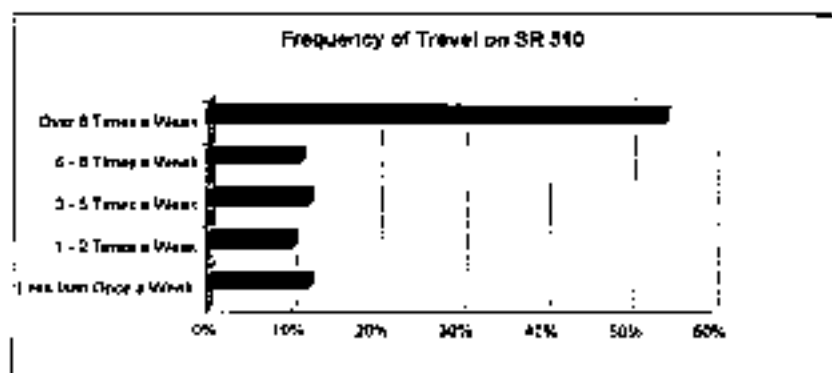
Data Implications

This survey was conducted to obtain a broad assessment of public preferences for potential improvements on the corridor. The questionnaires were structured to respond to the following research questions:

- What are the corridor use patterns?
- What are the important traffic issues related to the state route?
- What is the public's assessment of various suggested strategies for addressing traffic issues?

Corridor Use Patterns

Results indicate that the majority of respondents travel the route over eight times weekly. For the purpose of this report this group is referred to as "frequent users" or "commuters." The majority of the travel is conducted for the purpose of commute to school or work.



Regarding type of travel, the vast majority of those using the corridor typically use personal vehicles ('Car or Pickup Truck') for transportation (99.6% along State Route 510)

Important Traffic Issues

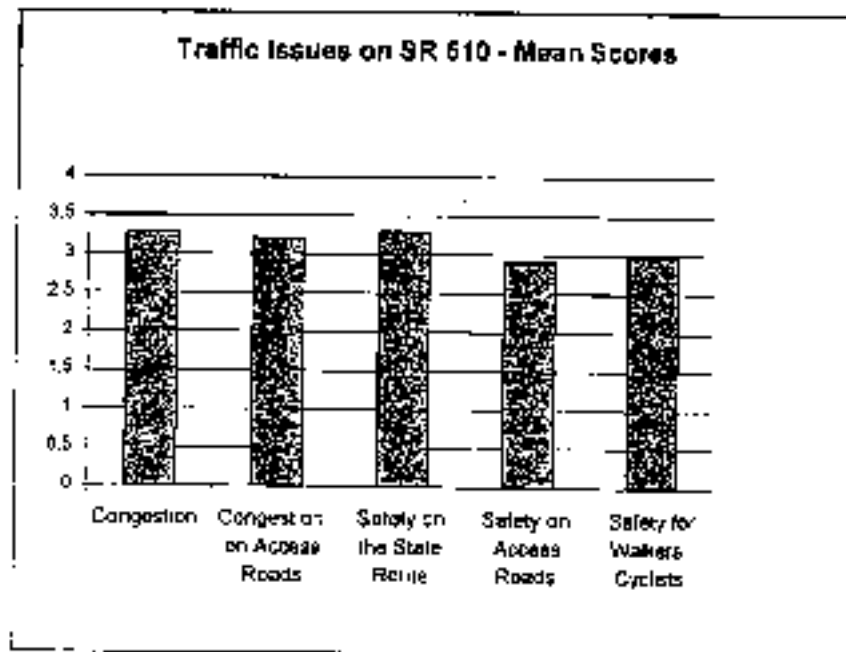
The survey asked respondents to assess the importance of five categories of traffic issues –

- Congestion on the State Route
- Congestion on roads accessing the State Route
- Safety on the State Route
- Safety on State Route Access Roads
- Safety for walkers and cyclists

Respondents rate the level of importance from '1' to '4', where '1' connotes 'Not Important' and '4' connotes 'Very Important'. The mean or average score given by respondents is used in the chart below as an indicator of the significance of the various issues.

As the first chart indicates, each of the five issues are considered important by respondents with 'Safety on the State Route' receiving the highest score in each corridor. This is followed closely by 'Congestion on the State Route'

Specific traffic issues noted by respondents tended to fall into three categories – congestion, safety, maintenance or engineering problems. In-depth discussions of significant traffic issues are found in the corridor-specific section of this report.



Public Assessment of Various Suggested Strategies

To address traffic issues, respondents tended to favor strategies involving engineering or structural changes. A relatively small number support, or are likely to use, enhanced transit services such as increased frequency of bus runs or additional or expanded Park and Ride lots. However, given the relatively large scale of private vehicle use to transit use, even a modest shift away from private interstop and toward additional public transit use could have a significant impact on gross public transit ridership levels.

There tends to be a positive correlation between the level of support of structural traffic improvement strategies and the frequency of corridor use. Frequent users are more likely to be supportive of efforts to both increase safety and reduce congestion. Not surprisingly, support for area-specific strategies are generally more strongly supported by those travelling through those areas.

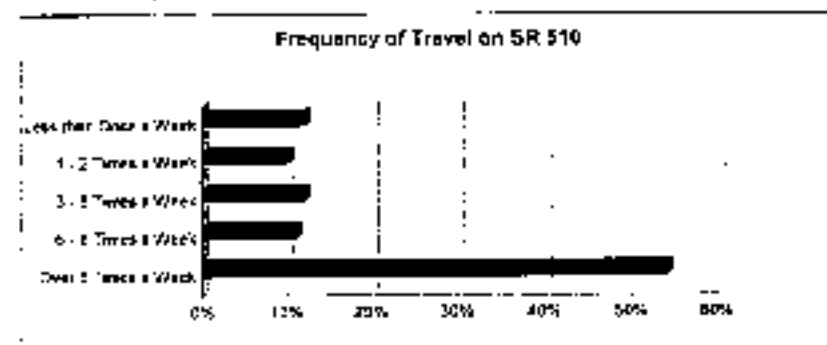
SR 510 Corridor Survey DETAILED FINDINGS

State Route 510 Corridor

State Route 510 ("SR 510") runs southeast from Interstate Highway 5 at the City of Lacey to connect with State Route 507 at the City of Yelm. This survey focused on the stretch of SR 510 between Pacific Avenue east of the City of Lacey and the intersection of SR 507 and SR 510 in the City of Yelm.

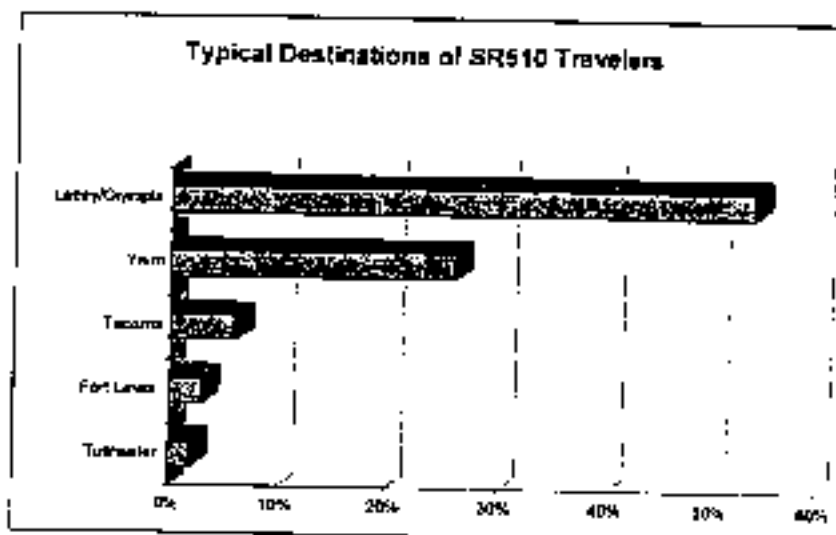
General Travel and Travel Patterns

Residents were asked the frequency of travel along SR 510 (for the purposes of the survey, they were asked to count one-way trips separately.) The majority of travelers (54%) make more than eight trips weekly along SR 510; this is followed by 12% making trips 5 to 8 times per week and another 12% report traveling SR 510 less than once per week. Those reporting traveling SR 510 6 to 8 times per week made up 11% of the respondents, 10% reported making the trip once or twice a week.



When asked their typical modes of transportation along SR 510 virtually all (99.6%) of respondents indicated that travel by car or pickup truck is their typical mode of transportation. Bicycling and walking were noted as the typical mode of transportation by one respondent.

The Olympia/Lacey is the typical destination of a majority of respondents (54%). It is a significantly more frequent destination for those residing in the Olympia/Lacey Zip Code area, with 73% of respondents from that area having Olympia/Lacey as their typical destination. Yelm (26%), Tacoma (6%), Fort Lewis (2%), and Tumwater (2%) followed Lacey/Olympia as the 'typical' destination. People with other typical destinations made up 5% of respondents, with Shelton, Mount Rainier, Steilacoom, Lakewood and 'Other' each noted by 1% of the respondents.

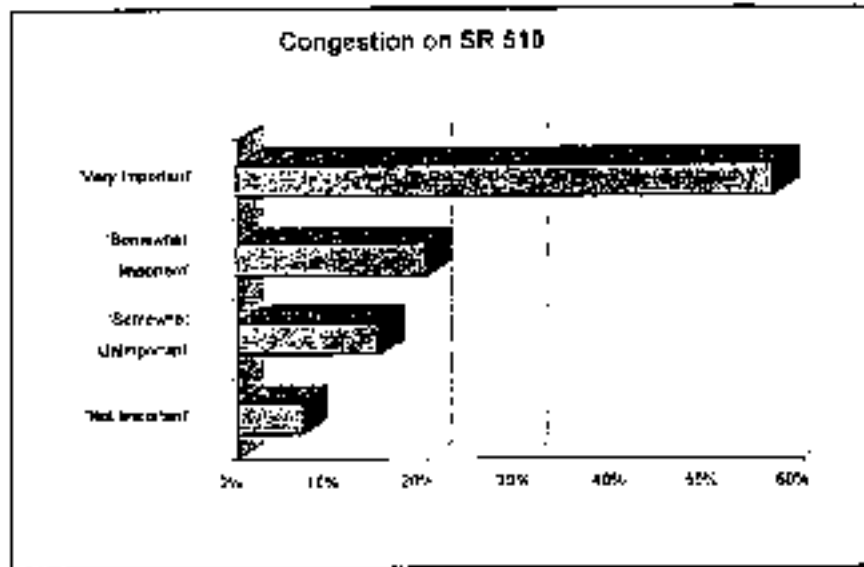


Respondents were asked the primary reason for using SR 510, with 55% using it to commute to school or work and 33% using it for shopping and other errands. Among frequent travelers, 90% use it in connection to school or work. Other primary reasons for travel noted by 12% of respondents are visiting family, commercial/business, and recreation.

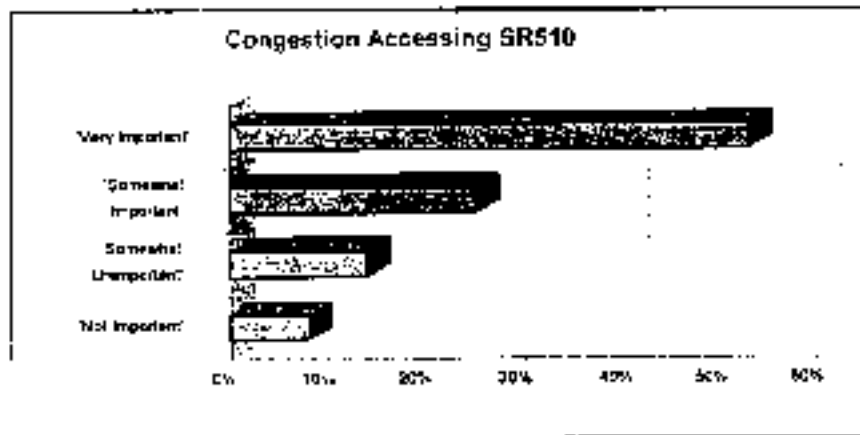
Main Traffic Issues

Residents were asked to rate the importance of five issues related to SR 510 and the roads accessing it. Respondents were asked to rate these issues from 1 to 4, with '1' indicating 'Not Important' and '4' indicating 'Very Important'.

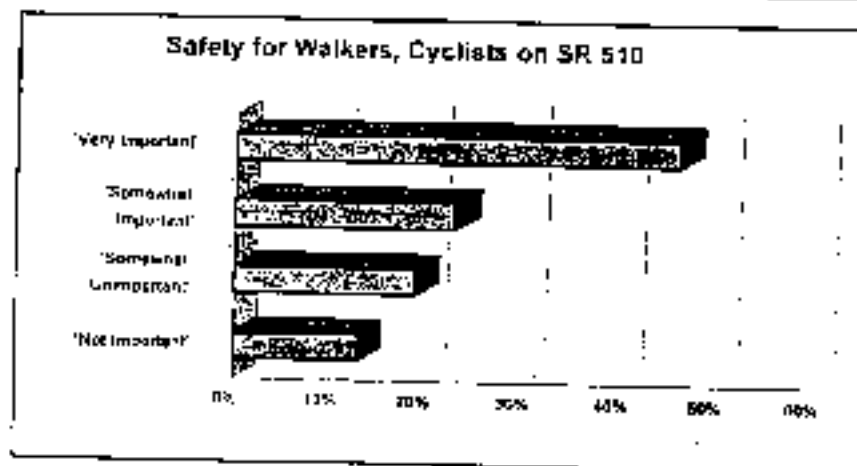
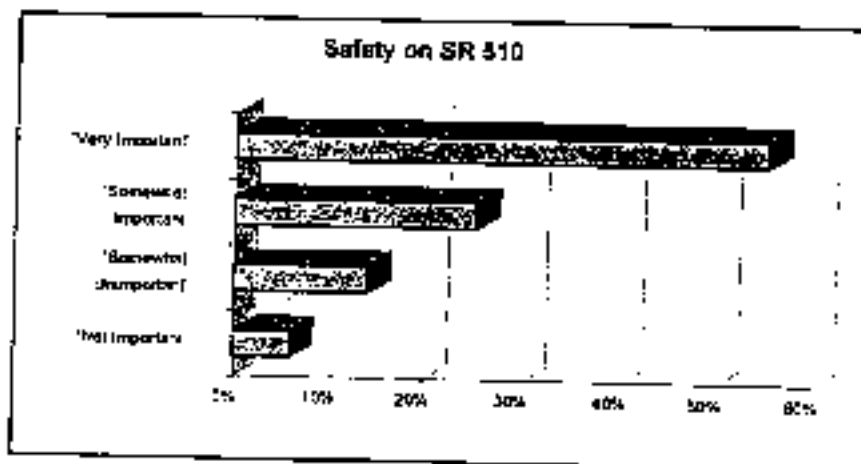
Congestion is a significant concern, with 57% indicating that addressing congestion SR 510 is 'Very Important'. 20% felt that it is 'Somewhat Important'.



Congestion on streets accessing SR 510 is a concern as well, with 55% indicating that it is 'Very Important' to address and 23% indicating that it is 'Somewhat Important'. Again, the issue is somewhat more important for frequent users of SR 510 with 60% indicating that it is 'Very important'.

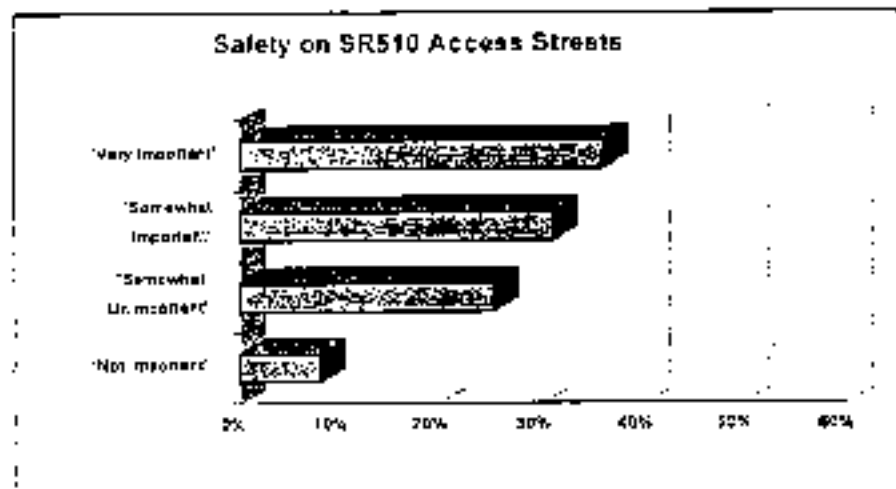


Safety on SR 510 is also a significant consideration, with 55% providing a rating of "Very Important" and 23% providing a rating of "Somewhat Important" rating on the importance of addressing safety. It is also higher (58% "Very Important") for those driving SR 510 three or more times a week.



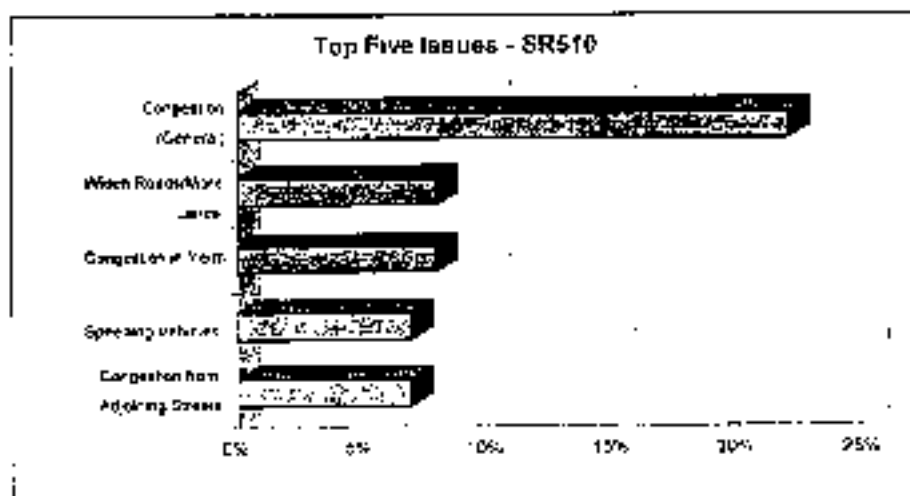
Respondents were given the opportunity to name the most significant traffic issue to address on or around SR 510. Of the survey respondents, 227 (81%) provided written responses. Of the responses, (27%) identified general congestion SR 510 as the most significant issue while (8%) identified "Widening Roads/Adding Lanes" as the most significant issue. Concern about both congestion and safety is higher among more frequent users of SR 510.

Safety on streets accessing SR 510 is a significant concern for most residents, with 36% providing a rating of "4" ("Very Important") and 31% providing a "3" rating for the importance of addressing safety. Safety on access streets is of particular concern among those having Tumwater as their typical destination, with 36% identifying access street safety as "Very Important."



Pedestrian and cyclist safety is also a concern, with 46% giving safety for pedestrians and cyclists a "4" rating and 23% giving a "3" rating. Not surprisingly, the issue is of greatest concern to pedestrians and cyclists (71% "Very Important").

"Congestion in Yelm" was also selected by 8% of respondents as the most important traffic issue. This was followed by "Speeders" (7%) and "Congestion Accessing SR 510 from Adjoining Streets" (7%).



Traffic issues tend to fall into three categories.

- **Congestion** - 53% of the respondents suggest congestion as the major traffic problem needing addressing. This includes 22% who identify general congestion as the top issue while, 8% identify congestion in Yelm and 7% identify congestion on streets accessing SR 510 as the most important traffic issue. Responses fell into several smaller categories as well. Among other congestion issues chosen were 'Casano Traffic' (3%), and 'Marvin Road Congestion' (2%).
- **Safety** - About 30% suggested safety-related improvements as the most important ones to address. This includes 7% who place speeding vehicles as their top concern; an additional 3% felt that speed limits on SR 510 are too high. There are 5% who identify 'General Safety' as their top concern and 4% who identify 'People Passing Improperly' as the most important issue to address. Responses related to safety which fall into smaller categories include 'Restricted Views Accessing the Road' (2%), and 'Safety for Walkers/School Children' (2%).
- **Maintenance and Engineering** - Over 20% of the respondents suggest maintenance or engineering problems as the top issues to address. 'Road Widening/Addition of Lanes' was chosen by 8% of respondents, 'Bypasses Needed' was the second most frequently mentioned engineering problem at 6%. Adding passing lanes and road maintenance were each chosen by 3% of respondents as the most important issue to address. Responses related to safety falling into smaller categories include 'Turn Lanes' (2%) and 'Wider and Better Shoulders' (1%).

Traffic Congestion Strategies

Participants were asked to comment on several possible strategies for addressing traffic congestion along SR 510, ranking for each strategy whether it is one that they are 'Very Likely to Support', 'Somewhat Likely to Support', 'Somewhat Unlikely to Support', or 'Very Unlikely to Support'.

Approaches for SR 510 between Pacific Avenue and the Old Pacific Highway

Construction of Additional Lanes

Respondents who were familiar with SR 510 between Pacific Avenue and the Old Pacific Highway were asked about their level of support for construction of two lanes in each direction with a center left-turn lane. Support for this approach is fairly strong, with 60% indicating that they are 'Very Likely to Support' and 26% indicating that they are 'Somewhat Likely to Support'. Those respondents indicating that they are 'Very Unlikely to Support' the approach made up 10%, while 5% indicate that they are 'Somewhat Unlikely to Support' the approach.

Respondents were asked about their level of support for construction of two lanes in each direction separated by a landscaped median, with openings at major intersections for turns and U-turns. Support for this approach is mixed, with 25% indicating that they are 'Very Likely to Support', 29% indicating that they are 'Somewhat Likely to Support', 27% of respondents indicate that they are 'Very Unlikely to Support', and 16% indicating that they are 'Somewhat Unlikely to Support' the approach.

Construction of Sidewalks and Bike Lanes

Respondents tend to be in favor of construction of sidewalks and bike lanes along this portion of SR 510. About one-third of the respondents (37%) indicate that they are 'Very Likely to Support' the addition of sidewalks and bike lanes while 31% indicate that they are 'Somewhat Likely to Support' the approach. Support is highest (67% 'Very Likely to Support') among those for whom walking or biking are their typical modes of transportation along SR 510.

However, there is also a fair amount of opposition to the addition of sidewalks and bike lanes, with 13% indicating that they are 'Very Unlikely to Support' the approach, while 15% indicate that they are 'Somewhat Unlikely to Support' the approach.

Proposed Strategies for SR 510 - Pacific Avenue to Old Pacific Highway	
Strategy	Mean Score
Likely to support adding two lanes in each direction with a center left turn lane	2.4
Likely to support two lanes in each direction separated by a landscaped median, with openings at major intersections	2.6
Likely to support sidewalks and bike lanes for pedestrians and cyclists	2.9
NOTE: Scores range from '1' to '4', with '1' 'Very Unlikely' and '4' 'Very Likely'.	

Strategies for SR 510 between the Old Pacific Highway and the Yelm City Limits

Construction of Additional Lanes

Respondents who are familiar with SR 510 between the Old Pacific Highway and the Yelm City Limits were asked about their level of support for construction of an additional lane in each direction with a divided median, with openings at major intersections to allow left turns and turnarounds. Support for this approach is fairly strong, with 61% indicating that they are 'Very Likely to Support' and 21% indicating that they are 'Somewhat Likely to Support.'

Those respondents indicating that they are 'Very Unlikely to Support' the approach made up 10%, while 8% indicate that they are 'Somewhat Unlikely to Support' the approach.

Potential Use of a Park and Ride Lot in near the Nisqually Reservation

Few respondents express an interest in using a Park and Ride lot near the Nisqually reservation. Those stating that they are 'Very Unlikely' to use a Park and Ride here comprise 71% of the respondents, and 14% state that they are 'Somewhat Unlikely' use it. Only 6% indicate that they would be 'Very Likely' to use it while 10% indicate that they would be 'Somewhat Likely' to use it.

Proposed Strategies for SR 510 - Old Pacific Highway to Yelm City Limits	
Strategy	Mean Score
Likely to support adding a lane in each direction with a divided median, with left turn openings at major intersections	3.3
Likely to support a Park and Ride lot near the Nisqually reservation	1.5
Likely to support sidewalks and bike lanes for pedestrians and cyclists	2.6
NOTE: Scores range from '1' to '4', with '1' 'Very Unlikely' and '4' 'Very Likely'.	

SR 510 between the Yelm City Limits and SR 507

Respondents familiar with SR 510 between the Yelm City Limits and SR 507 were asked how often they traveled on SR 510 through Yelm to northern destinations such as McKenna or Roy. Responses were somewhat split between people who frequently travel northward (30% traveling the destinations north of Yelm more than 5 times per week) and those who make the trip infrequently (39% traveling to destination north less than once a week).

The SR 510 Route Development Plan Steering Committee developed a set of objective statements and associated generic alternatives for issues such as Safety, Mobility, Transit, and Ferries. These statements were used to identify what the Steering Committee wanted to achieve with the SR 510 RDP. For each objective statement, the steering committee identified a list of generic alternatives. The objective statements were designed with the intention that they would be measurable.

The following Objective Statements and Alternatives were developed and adopted by the SR 510 Steering Committee.

Traffic Mobility*Objective Statements****Increase the Person Carrying Capacity of SR 510****Generic Alternatives*

- Add Lanes (through lanes, passing lanes, turning lanes, Slow Vehicle Turnouts)
- Channelization & Intersection Improvements
- Access Management
- Signalization (add signals, interconnect signals)
- HOV Applications (Transit, Queue Jumps Lanes)
- Transportation Demand Management (TDM)
- Incorporate Applicable Freight and Transit Alternatives

Transit Mobility*Objective Statements****Increase Passenger Access to Transit on SR 510****Generic Alternatives*

- Improve Passenger Stopping Areas
- Sidewalks / Crossings
- Bike Lanes
- Park & Ride Lots
- Transit Center
- Transportation Demand Management

Objective Statement

Increase Transit Vehicle Access to SR 510

Generic Alternatives

- Increase Load Carrying Capacity of Highway
- Increase Operating Speed
- Bus Pullouts
- Access to Transit Facilities
- Improved Priority Treatment
- Queue Jump Lanes
- HOV Lanes

Highway Safety

Objective Statement

Decrease the Projected Number and Severity of Collisions on SR 510

Generic Alternatives

- The Highest Standards (City, County, State) Should Apply to Alignment, Sight Distance, and the Roadside
- Reduce Speeds
- Route Continuity
- Access Management
- Intersection Channelization and Illumination
- Shoulder Widening for Bikes and Pedestrians
- Grade Separation for Bikes and Pedestrians
- Safe Walking Routes
- Access / Capacity for Emergency Service Vehicles



Nisqually Indian Tribe
4820 She-Nah-Num Drive S.E.
Olympia, Washington 98513
Phone: (360) 456-5221

August 12, 1997

RECEIVED

AUG 20 1997

OLYMPIA REGION

Mr. Ryan Larson, Planning
WSDOT Olympic Region Office
5720 Capital Blvd
Tumwater, WA 98512

Dear Mr. Larson:

This is to provide tribal comments on the draft Highway 510 Route Development Plan. In our Steering Committee participation, consultation, communication, and open houses, we have been favorably impressed with WSDOT Olympic Region Planning staff in their effort to develop a Highway 510 plan which will be a tool for future improvements. We reviewed the draft Highway 510 Route Development Plan, particularly the part about the stretch of highway through the Nisqually Reservation. Below are our comments based on the WSDOT summary of recommendations:

1. *Widen SR 510 by constructing one additional general purpose lane in each direction separated by a divided median.*
We generally concur. We also want to maintain right- and left-turn access for the existing roads and driveways.
2. *Add bike lanes and sidewalks.*
We generally concur. Off-road pathways may be used instead of sidewalks to accommodate community bicyclists, pedestrians, and bus riders.
3. *Recommend that a Park & Ride lot be established within the vicinity of the Nisqually Reservation.*
We concur. A Park & Ride lot may be associated with the transit stop(s) and/or the economic and community development centers.
4. *Consolidate the access within the Nisqually Reservation allowing for two channelized intersections.*
We differ. Some consolidated access and two channelized intersections or more are likely. Access will be consolidated if possible. We want to maintain right- and left-turn access for existing roads and driveways. New access may also be necessary to accommodate future development.
5. *Emphasize Travel Demand Management (TDM) strategies.*
We generally concur. Because many are without transportation, we also want to emphasize strategies to improve mobility for community members in order to maximize their opportunities to utilize tribal and regional programs and services.
6. *Change the Access Management Classification from Class 2 to Class 3.*
We generally concur. We concur with the class change and the associated design speed recommendations. However, we want to maintain the existing access points of our road network until initially approved improvements are made. The number of existing access points is greater than Class 3 standards describe. It is important to understand that the South Nisqually Reservation area is a community located on both sides of the highway that is rapidly growing into a town or urban area. We will work with other jurisdictions to facilitate this development.

In addition, the tribe supports a feasibility study of developing a Yelm Highway and Reservation Road intersection. In keeping with the government-to-government relationship as recognized in the Centennial Accord, the tribe expects full communication, participation, and/or consultation on any highway improvements or changes to the current system which may affect the tribe. Please contact Lynn Scroggins or me if you have any questions about this document at 436-5211 or 943-2119.

Sincerely,



Joe Cushman, Planning Director
Nisqually Indian Tribe

cc: Reggie Wells, Lynn Scroggins, Saul Kardoroni



City of Yelm

105 Yelm Avenue West
P.O. Box 479
Yelm, Washington 98597
206-458-3244

October 29, 1997

Mr. Gary Farnsworth
Washington State Department of Transportation
P.O. Box 47440
Olympia WA 98504-7440

Re: 510 Route Development Plan

Dear Mr. Farnsworth,

We have completed our review of the WSDOT Olympic Region "draft" 510 Route Development Plan and endorse the department's efforts in addressing critical transportation issues.

It is especially important to note the "510 Route Development Plan" addresses route classification, access management, roadway geometrics, mobility, transit, pedestrian and land use issues. This effort will enhance a long range plan to insure traffic safety, route preservation and regional links for the motoring public. The Route Development Plan is a good example of inter jurisdictional cooperation to re-solve regional transportation issues.

As a member of the "steering committee" it was a pleasure to work with the WSDOT staff addressing difficult issues with a positive solution.

If you have any questions feel free to call me at (206) 458-6496.

Sincerely,

City of Yelm

Ken Gertman
Public Works Director



Supporting
your community
together...

CITY OF **LACEY**

POST OFFICE BOX 7446 COLLEGE BLVD. SE
LACEY, WA 98504-7446

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Mayor
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JAMES J. WENDE

CITY MANAGER
GREG J. CUOMO

December 3, 1997

Mr. Gary Farnsworth
WA State Dept. of Transportation
PO Box 47440
Olympia, WA 98504-7440

SUBJECT: 510 Route Development Plan

Dear Mr. Farnsworth:

We have completed our review of the WSDOT Olympic Region "draft" 510 Route Development Plan and endorse the department's efforts in addressing critical transportation issues.

It is especially important to note the "510 Route Development Plan" addresses route classification, access management, roadway geometrics, mobility, transit, pedestrian and land use issues. This effort will enhance a long range plan to insure traffic safety, route preservation and regional links for the motoring public. The Route Development Plan is a good example of interjurisdictional cooperation to resolve regional transportation issues.

As a member of the "steering committee" it was a pleasure to work with the WSDOT staff addressing difficult issues with a positive solution.

If you have any questions, feel free to call me at (360) 438-2681.

Sincerely,

Martin A. Hoppe, P.E.
Transportation Manager

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DEC 05 1997
OLYMPIC REGION



City Clerk
(360) 438-2681

City Council
(360) 438-2681

City Manager
(360) 438-2681

City Auditor
(360) 438-2681

Community Development
(360) 438-2681

Finance
(360) 438-2681

Public Works
(360) 438-2681

Police
(360) 438-2681

Public Works
(360) 438-2681

Tax
(360) 438-2681



THURSTON REGIONAL PLANNING COUNCIL

2404 HERITAGE COURT SW #8 OLYMPIA, WASHINGTON 98502-6031

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OLYMPIA REGION

December 4, 1997

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Olympia School District
Gunnison School District
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The Evergreen State College

Harold Robertson, AICP
Executive Director

(206) 335-5100
FAX 754-8411



Mr. Gary Farnsworth, PE
Transportation Planning Engineer
Washington State Department of Transportation
PO Box 47440
Olympia WA 98504-7440

Attention: Chris Schneider, P.E.

Dear Mr. Farnsworth:

SUBJECT: SR-510 Route Development Plan

I am writing this letter to thank you for the opportunity to review and comment on the draft SR-510 Route Development Plan. You have created a visionary long range plan for the SR-510 Corridor.

In order to assure efficient movement of people and freight along the SR-510 corridor, it is important to plan for the growth that continues to occur. The SR-510 Route Development Plan commendably addresses the SR-510 corridor mobility issue with multi modal solutions.

As a member of the Steering Committee, I commend you and your staff for doing an excellent job in getting the public and local technical staff involved in the plan development process. As you are aware, while you were preparing the route development plan, Thurston Regional Planning Council was working on updating its long range Regional Transportation Plan. We used the same land use assumptions and consistent long range traffic projections. We are very glad to see this close coordination. It is a good example of inter jurisdictional cooperation to develop regional transportation solutions.

I look forward to receiving the final document, and will continue to work with WSDOT to coordinate the implementation of the plan.

Sincerely,

Shuming Yarr, Senior Transportation Planner

cc: to

cc: Harold Robertson, AICP, TRPC Executive Director

Providing Visionary Leadership on Regional Plans, Policies and Issues

Appendix D Environmental and Roadside Preservation

This environmental screening was prepared by the Olympic Region Environmental and Hydraulic Services Office and provides an overview of existing environmental conditions and resulting concerns and/or limitations for the study area.

For the purposes of this Route Development Plan, the environmental screening does not include the portion of SR 510 from the SR 5 Interchange to the Pacific Avenue Intersection. Improvements to this section of the highway are currently being designed and project level environmental documentation is being prepared.

Environmental Elements

Earth

The existing highway alignment traverses level to rolling terrain with a few localized steep slopes. The roadway profile includes grades up to 8%, most cuts and embankments are 50% slope or flatter.

The Soil Conservation Service *Soil Survey of Thurston County Area, Washington*, General Soil Map, compiled in 1985, classifies the soils in the corridor, from west to east, as Alderwood-Everett association: moderately deep and very deep, moderately well drained and somewhat excessively drained, nearly level to steep soils, on glacial till plains; and Spanaway-Nisqually association: very deep, somewhat excessively drained, nearly level to rolling soils, on glacial outwash terraces.

There are no geologic hazards within the SR 510 corridor identified on the Thurston County Critical Area inventory maps.

Air

The SR 510 corridor is not located within a designated Air Quality Non-attainment Area, however, at the time of this report, U.S. EPA is reconsidering the current National Ambient Air Quality Standards (NAAQS). New standards, if enacted, will be more stringent than those in place.

Generally an improvement in Level of Service will result in an improvement to air quality; an increase in traffic volumes will increase pollutants discharged to the air.

Aquatic Resources

The following mapped waterbodies as shown on the USGS quad maps and the Thurston County Critical Areas maps cross the SR 510 corridor:

Waterbody	Miles Post	WRRIA Section	DNIR Stream Type
Little McAllister Creek	5.5	11.0328	unclassified
Thompson Creek	13.0	11.0041	type 1 below 510, type 3 above

* - Water Resource Inventory Area

Mapped possible wetland areas include a large area of hydric (wetland) soil type associated with Little McAllister Creek south (right) of SR 510. This same area is mapped as wetland by the County. A second wetland close to the highway is a small pond and associated fringe wetland at approximate MP 8.0 (left). Thompson Creek also has a narrow riparian wetland associated with it both up and downstream of the existing SR 510 crossing.

When sections of the route are funded and scheduled for project development, detailed investigations will be done to determine the actual presence and extent of wetlands and other aquatic resources.

There are no designated flood plains within the corridor.

The entire route lies within a Thurston County Critical Area Ordinance designated Extreme Aquifer Recharge Area. All proposals that could affect the quality, quantity, or drainage patterns of highway generated stormwater runoff will be subject to County review and will require a Critical Area Ordinance Permit.

In addition, a segment of SR 510, from approximately milepost 6 to milepost 9, is within the McAllister Spring Geologically Sensitive Aquifer which includes the City of Olympia municipal water supply. Any development in this area will require both City and County approval. The highway is quite close to the City's actual withdrawal point; highway widening proposals would require stormwater designs preventing water supply contamination from normal highway runoff and potential spills.

Vegetation

Typical vegetation in the route includes Douglas fir, Oregon oak, red alder, ornamental trees and shrubs, scotch broom, madrona, willow, bitter cherry, elderberry, Indian plum, hazelnut, Oregon grape, snowberry, salal, bracken fern, blackberry, pasture grasses, turf grasses, huckleberry, and nettle.

Several areas within the route are mapped as oak woodlands. Oak woodlands are listed, and protected as, priority habitats. Local jurisdictions require management plans that address impacts and protection of this habitat type. The management plan requirements are written for other types of projects, not for road projects.

Approximate locations of oak woodlands are shown in the following table:

Start Mile Post	End Mile Post	Side of Road	Oak Woodland Type
3.3	3.5	rt. and lt.	oak dominant, and conifer deciduous.
4.3	4.5	rt. and lt.	oak dominant
8.9	9.1	rt. and lt.	conifer mixed
9.4	11.8	rt.	conifer deciduous
12.5	13.1	rt.	conifer mixed
12.7	13.1	lt.	conifer mixed

Fish and Wildlife

Habitat in the corridor is available for a variety of species including songbirds, hawks, amphibians, large and small mammals, resident fish and possibly anadromous fish.

There may be anadromous species in addition to resident fish species in Thompson Creek (WRIA 11.0041) and in Little McAllister Creek (WRIA 11.0328). However, both have impassable cascades downstream of the highway according to the *Catalog of WA Streams and Salmon Utilization*. Actual use was not determined, but will need to be when specific projects are funded and scheduled.

Roadway designs should carefully consider the impacts of design features that inhibit wildlife passage across the road such as noise and median barriers as well as impassable fencing.

There is potential for threatened, endangered, and sensitive species to be present in, or adjacent to, the route. There is a mapped western gray squirrel habitat at approximate MP 7.7 rt. and a mapped bluebird nesting box at approximate MP 12.8 lt. Additional species that may be present within the route corridor include red-tailed hawks and mountain quail.

When sections of the route are funded and scheduled for project development, a Biological Assessment (BA) will be prepared (if required). A BA documents (1) the presence of endangered/threatened species; (2) the impacts to those species or their habitats; (3) the mitigation measures necessary to avoid or minimize impacts to those species. A habitat management plan may be required for local jurisdictions if important species are present.

Energy and Natural Resources

Electricity, to power intersection illumination and signalization systems, is the only permanent energy requirement resulting from proposed improvements.

Environmental Health

There is currently no evidence or record that proposed highway improvements would impact any abandoned or operating underground fuel storage tanks, or any other potentially hazardous substance. Future proposed right of way purchases will be preceded by Initial Site Assessments to confirm this.

Highway capacity improvements in the form of added through lanes have the potential to increase noise impacts to sensitive receptors above acceptable levels. Where these improvements are proposed within developed areas noise impact analyses must be provided, and practicable abatement treatments considered. Limited access facilities, with widely spaced access points, offer the best mitigation possibilities.

Local governments are encouraged to regulate land developments such that noise sensitive land uses be prohibited adjacent to state highways and that developments near highways be planned, designed and constructed in such a way that noise impacts are minimized.

Land and Shoreline Use

Land use and zoning are discussed in chapter 2 of this Plan. The few agricultural uses occurring adjacent to the highway consist of pasture lands.

The only shoreline environment designation within the SR 510 corridor is Thompson Creek, milepost 13.0 Conservancy

Any work within this jurisdictional shorelines (within 200' of the Ordinary High Water Line for streams and rivers) will require compliance with the Shoreline Development Regulations, and a Shoreline Substantial Development Permit, Variance, or Exemption.

Housing

The existing SR 510 right of way will not accommodate the proposed widening; construction of these improvements will result in impacts to properties, dwellings and businesses adjacent to the highway. For this Plan, the level of design detail required to quantify these impacts is not available. As growth and development continues along the corridor, the potential for impacts due to facility expansion will increase.

Again, WSDOT encourages local governments to regulate development immediately adjacent to state highways to minimize impacts resulting from these anticipated expansions.

Aesthetics

The roadside character of the existing two lane highway transitions from semi-urban to rural, from west to east, then back to semi-urban as the route approaches Yelm. While not designated as a Scenic or Recreational Highway the visual and aesthetic impacts resulting from establishing a multi-lane divided highway are undeniable.

These impacts can be lessened by implementing roadside treatments outlined in the WSDOT Roadside Classification Plan.

Lighting and Glare

The only light produced by proposals in this Plan will be from traffic signals, installed at selected intersections, operating day and night; and by highway illumination systems, installed at all channelized or signalized intersections, operating at night.

Recreation

As noted above, SR 510 is not a designated Scenic or Recreational Highway. It is however a well traveled route to Mt. Rainier via state routes 507, 702, 7 and 706.

Other recreation opportunities within the SR 510 corridor include indirect access to Lake St. Clair via Mullen Road at milepost 7.6 and the Centralia City Light park access at milepost 13.1

Historic and Cultural Preservation

There are no historical sites listed on Federal, State or local registers within the SR 510 corridor. The Evergreen Ballroom at milepost 5.2 has local historical interest, and could be eligible for listing.

Right of way purchase or proposed earthwork activities outside the existing roadway prism will require an Archaeological/Cultural Resource Survey.

Transportation

Existing local streets and state highways accessing SR 510 are described in section 1.2. Transit facilities and Park and Ride proposals are discussed in section 1.10.

The primary transportation impact will be to travel patterns resulting from the proposed median treatments, limiting crossing opportunities to selected intersections. Public services such as school busses and mail carriers, as well as local freight deliveries, local residents and local business employees will need to adjust.

Public Service

The SR 510 improvements proposed in this plan will not result in an increased need for public services.

Utilities

No new utilities are required by proposals included in this Plan. Electric power, already available throughout the corridor, will be required for new traffic signal and highway illumination installations. In addition, no existing utilities have been noted that are likely to be significantly impacted by these proposals.

This Appendix provides selected text from WAC 468-52 for informational purposes as it relates to highway access management. Due to volume, the complete chapter is not presented. For additional information, please refer to other related chapters such as WAC 468-51 and RCW 47.50 (not reproduced in this Appendix).

WAC 468-52-010 Purpose.

This chapter is adopted in accordance with chapter 47.50 RCW for the implementation of an access control classification system and standards for the regulation and control of vehicular ingress to, and egress from the state highway system.

WAC 468-52-020 Definitions.

For the purposes of this chapter, the following definitions of the terms shall apply unless the context clearly indicates otherwise:

"Conforming connection" means a connection that meets current department location, spacing, and design criteria.

"Connection" means approaches, driveways, turnouts, or other means of providing for the right of access to or from controlled access facilities on the state highway system.

"Connection permit" means a written authorization given by the department for a specifically designed connection to the state highway system at a specific location for a specific type and intensity of property use and specific volume of traffic for the proposed connection, based on the final stage of proposed development of the applicants property. The actual form used for this authorization will be determined by the department.

"Controlled access facility" means a transportation facility (excluding limited access facilities as defined in chapter 47.52 RCW) to which access is regulated by the governmental entity having jurisdiction over the facility. Owners or occupants of abutting lands and other persons have a right of access to and from such facility at such points only and in such manner as may be determined by the governmental entity.

"Corner clearance" means the distance from an intersection of a public or private road to the nearest connection along a controlled access facility. This distance is measured from the closest edge of the traveled way of the intersecting road to the closest edge of the traveled way of the connection measured along the traveled way (through lanes).

"Department" means the Washington state department of transportation.

"Governmental entity" means, for the purpose of this chapter, a unit of local government or officially designated transportation authority that has the responsibility for planning, construction, operation, maintenance, or jurisdiction over transportation facilities.

"Intersection" means an at grade connection on a state highway with a road or street duly established as a public road or public street by the local governmental entity.

"Joint use connection" means a single connection point that serves as a connection to more than one property or development, including those in different ownership's or in which access rights are provided in the legal descriptions.

"Limited access facility" means a highway or street especially designed or designated for through traffic, and over, from, or to which owners or occupants of abutting land, or other persons have no right or easement, or only a limited right or easement of access, light, view, or air by reason of the fact that their property abuts upon such limited access facility, or for any other reason to accomplish the purpose of a limited access facility.

"Nonconforming connection" means a connection not meeting current department location, spacing, or design criteria.

"Permit" means written approval issued by the department, subject to conditions stated therein, authorizing construction, reconstruction, maintenance, or reclassification of a state highway connection and associated traffic control devices on or to the department's right of way.

"Permitting authority" means the department or any county, municipality, or transportation authority authorized to regulate access to their respective transportation systems.

"State highway system" means all roads, streets, and highways designated as state routes pursuant to chapter 47.17 RCW.

WAC 468-52-030 General

The connection and intersection spacing distances specified in this chapter are minimums. Greater distances may be required by the department on individual permits issued in accordance with chapter 468-51 WAC to provide desirable traffic operational and safety characteristics. If greater distances are required, the department will document, as part of the response to a connection permit application pursuant to chapter 468-51 WAC, the reasons, based on traffic engineering principles, that such greater distances are required. Nonconforming permits may be issued in accordance with chapter 468-51 WAC allowing less than minimum spacing where no other reasonable access exists, or where it can be substantiated by a traffic analysis in the permit application that allowing less than the minimum spacing would not

adversely affect the desired function of the state highway in accordance with the assigned access classification, and would not adversely affect the safety or operation of the state highway.

WAC 468-52-040 Access control classification system and standards.

This section provides an access control classification system consisting of five classes. The functional characteristics and the access control design standards for each class are described. The classes are arranged from the most restrictive, class one, to the least restrictive, class five. This access control classification system does not include highways or portions thereof that have been established as limited access highways pursuant to chapter 47.52 RCW. For state highways that are planned for the establishment of limited access control in accordance with the Master Plan for Limited Access Highways, an access control classification will be assigned to each highway segment to remain in effect until such time that the facility is established as a limited access facility.

On all access classes, property access shall be located and designed to minimize interference with transit facilities and/or high occupancy vehicle (HOV) facilities on state highways where such facilities exist or where such facilities are proposed in a state, regional, metropolitan, or local transportation plan. In such cases, if reasonable access is available from the general street system, primary property access shall be provided from the general street system rather than from the state highway.

(1) Class one.

(a) Functional characteristics:

These highways have the capacity for safe and efficient high speed and/or high volume traffic movements, providing for interstate, interregional, and intercity travel needs and some intracity travel needs. Service to abutting land is subordinate to providing service to major traffic movements. Highways in this class are typically distinguished by a highly controlled, limited number of public and private connections, restrictive medians with limited median openings on multilane facilities, and infrequent traffic signals.

(b) Access control design standards:

(i) It is the intent that the design of class one highways be generally capable of achieving a posted speed limit of fifty to fifty-five mph. Spacing of intersecting streets, roads, and highways shall be planned with a minimum spacing of one mile. One-half mile spacing may be permitted, but only when no reasonable alternative access exists.

(ii) Private direct access to the state highway shall not be permitted except when the property has no other reasonable access to the general street system. The following standards will be applied when direct access must be provided:

(A) The access connection shall continue until such time that other reasonable access to a highway with a less restrictive access control classification or access to the general street system becomes available and is permitted.

(B) The minimum distance to another public or private access connection shall be one thousand three hundred twenty feet. Nonconforming connection permits may be issued to provide access to parcels whose highway frontage, topography, or location would otherwise preclude issuance of a conforming connection permit. No more than one connection shall be provided to an individual parcel or to contiguous parcels under the same ownership.

(C) All private direct access shall be for right turns only on multilane facilities, unless special conditions warrant and are documented by a traffic analysis in the connection permit application, signed and sealed by a qualified professional engineer, registered in accordance with chapter 18.43 RCW.

(D) No additional access connections to the state highway shall be provided for newly created parcels resulting from property divisions. All access for such parcels shall be provided by internal road networks. Access to the state highway will be at existing permitted connection locations or at revised connection locations, as conditions warrant.

(iii) A restrictive median shall be provided on multilane facilities to separate opposing traffic movements and to prevent unauthorized turning movements.

(2) Class two.

(a) Functional characteristics:

These highways have the capacity for medium to high speeds and medium to high volume traffic movements over medium and long distances in a safe and efficient manner, providing for interregional, intercity, and intracity travel needs. Direct access service to abutting land is subordinate to providing service to traffic movement. Highways in this class are typically distinguished by existing or planned restrictive medians, where multilane facilities are warranted, and minimum distances between public and private connections.

(b) Access control design standards:

(i) It is the intent that the design of class two highways be generally capable of achieving a posted speed limit of thirty-five to fifty mph in urbanized areas and forty-five to fifty-five mph in rural areas. Spacing of intersecting streets, roads, and highways shall be planned with a minimum spacing of one-half mile. Less than one-half mile intersection spacing may be permitted, but only when no reasonable alternative access exists. In urban areas and developing areas where higher volumes are present or growth that will require signalization is expected in the foreseeable future, it is imperative that the location of any public access be planned carefully to ensure adequate signal progression. Addition of all new connections, public or private, that may require signalization will require an engineering analysis signed and sealed by a qualified professional engineer, registered in accordance with chapter 18.43

RCW.

(ii) Private direct access to the state highway system shall be permitted only when the property has no other reasonable access to the general street system or if access to the general street system would cause traffic operational conditions or safety concerns unacceptable to the local governmental entity. When direct access must be provided, the following conditions shall apply:

(A) The access connection shall continue until such time that other reasonable access to a highway with a less restrictive access control classification or acceptable access to the general street system becomes available and is permitted.

(B) The minimum distance to another public or private access connection shall be six hundred sixty feet. Nonconforming connection permits may be issued to provide access to parcels whose highway frontage, topography, or location would otherwise preclude issuance of a conforming connection permit. No more than one connection shall be provided to an individual parcel or to contiguous parcels under the same ownership unless the highway frontage exceeds one thousand three hundred twenty feet and it can be shown that the additional access would not adversely affect the desired function of the state highway in accordance with the assigned access classification, and would not adversely affect the safety or operation of the state highway.

(C) All private direct access shall be for right turns only on multilane facilities, unless special conditions warrant and are documented by a traffic analysis in the connection permit application, signed and sealed by a qualified professional engineer, registered in accordance with chapter 18.43 RCW.

(D) No additional access connections to the state highway shall be provided for newly created parcels resulting from property divisions. All access for such parcels shall be provided by internal road networks. Access to the state highway will be at existing permitted connection locations or at revised connection locations, as conditions warrant.

(iii) On multilane facilities a restrictive median shall be provided to separate opposing traffic movements and to prevent unauthorized turning movements.

(3) Class three.

(a) Functional characteristics:

These highways have the capacity for moderate travel speeds and moderate traffic volumes for medium and short travel distances providing for intercity, intracity, and intercommunity travel needs. There is a reasonable balance between direct access and mobility needs for highways in this class. This class is to be used primarily where the existing level of development of the adjoining land is less intensive than maximum buildout and where the probability of significant land use change and increased traffic demand is high. Highways in this class are typically distinguished by planned restrictive medians, where multilane facilities are warranted, and minimum distances between public and private connections. Two-way left-turn-lanes may be utilized where special conditions warrant. Development of properties

with internal road networks and joint access connections are encouraged.

(b) Access control design standards:

(i) It is the intent that the design of class three highways be generally capable of achieving a posted speed limit of thirty to forty mph in urbanized areas and forty-five to fifty-five mph in rural areas. In rural areas, spacing of intersecting streets, roads, and highways shall be planned with a minimum spacing of one-half mile. Less than one-half mile intersection spacing may be permitted, but only when no reasonable alternative access exists. In urban areas and developing areas where higher volumes are present or growth that will require signalization is expected in the foreseeable future, it is imperative that the location of any public access be planned carefully to ensure adequate signal progression. Where feasible, major intersecting roadways that may ultimately require signalization shall be planned with a minimum of one-half mile spacing. Addition of all new connections, public or private, that may require signalization will require an engineering analysis signed and sealed by a qualified professional engineer, registered in accordance with chapter 18.43 RCW.

(ii) Private direct access:

(A) No more than one access shall be provided to an individual parcel or to contiguous parcels under the same ownership unless it can be shown that additional access points would not adversely affect the desired function of the state highway in accordance with the assigned access classification, and would not adversely affect the safety or operation, of the state highway.

(B) The minimum distance to another public or private access connection shall be three hundred thirty feet. Nonconforming connection permits may be issued to provide access to parcels whose highway frontage, topography, or location would otherwise preclude issuance of a conforming connection permit.

(4) Class four.

(a) Functional characteristics:

These highways have the capacity for moderate travel speeds and moderate traffic volumes for medium and short travel distances providing for intercity, intracity, and intercommunity travel needs. There is a reasonable balance between direct access and mobility needs for highways in this class. This class is to be used primarily where the existing level of development of the adjoining land is more intensive and where the probability of major land use changes is less probable than on class three highway segments. Highways in this class are typically distinguished by existing or planned nonrestrictive medians. Restrictive medians may be used as operational conditions warrant to mitigate turning, weaving, and crossing conflicts. Minimum connection spacing standards should be applied if adjoining properties are redeveloped.

(b) Access control design standards:

(i) It is the intent that the design of class four highways be generally capable

of achieving a posted speed limit of thirty to thirty-five mph in urbanized areas and thirty-five to forty-five mph in rural areas. In rural areas, spacing of intersecting streets, roads, and highways shall be planned with a minimum spacing of one-half mile. Less than one-half mile intersection spacing may be permitted, but only when no reasonable alternative access exists. In urban areas and developing areas where higher volumes are present or growth that will require signalization is expected in the foreseeable future, it is imperative that the location of any public access be planned carefully to ensure adequate signal progression. Where feasible, major intersecting roadways that may ultimately require signalization shall be planned with a minimum of one-half mile spacing. Addition of all new connections, public or private, that may require signalization will require an engineering analysis signed and sealed by a qualified professional engineer, registered in accordance with chapter 18.43 RCW.

(ii) Private direct access:

(A) No more than one access shall be provided to an individual parcel or to contiguous parcels under the same ownership unless it can be shown that additional access points would not adversely affect the desired function of the state highway in accordance with the assigned access classification, and would not adversely affect the safety or operation of the state highway.

(B) The minimum distance to another public or private access connection shall be two hundred fifty feet. Nonconforming connection permits may be issued to provide access to parcels whose highway frontage, topography, or location would otherwise preclude issuance of a conforming connection permit.

(5) Class five.

(a) Functional characteristics:

These highways have the capacity for moderate travel speeds and moderate traffic volumes for primarily short travel distances providing for intra-city and intracommunity trips primarily for access to state highways of higher classification. Access needs may generally be higher than the need for through traffic mobility without compromising the public health, welfare, or safety. These highways will generally have nonrestrictive medians.

(b) Access control design standards:

(i) It is the intent that the design of class five highways be capable of achieving a posted speed limit of twenty-five to thirty-five mph. In rural areas, spacing of intersecting streets, roads, and highways shall be planned with a minimum spacing of one-quarter mile. Less than one-quarter mile spacing may be permitted where no reasonable alternative exists. In urban areas and developing areas where higher volumes are present or growth that will require signalization is expected in the foreseeable future, it is imperative that the location of any public access be planned carefully to ensure adequate signal progression. Where feasible, major intersecting roadways that may

ultimately require signalization shall be planned with a minimum of one-quarter mile spacing. Addition of all new connections, public or private, that may require signalization will require an engineering analysis signed and sealed by a qualified professional engineer, registered in accordance with chapter 18.43 RCW.

(ii) Private direct access:

(A) No more than one access shall be provided to an individual parcel or to contiguous parcels under the same ownership unless it can be shown that additional access points would not adversely affect the desired function of the state highway in accordance with the assigned access classification, and would not adversely affect the safety or operation of the state highway.

(B) The minimum distance to another public or private access connection shall be one hundred twenty-five feet. Nonconforming connection permits may be issued to provide access to parcels whose highway frontage, topography, or location would otherwise preclude issuance of a conforming connection permit.

(6) Interim standards. The interim standards set forth in this section shall be effective for all segments of the state highway system, except where access rights have been previously acquired pursuant to chapter 47.52 RCW, until superseded by an adopted access control classification as defined in this chapter. These interim standards are mandatory for all state highways where the department is the permitting authority, and are advisory for city streets designated as state highways pursuant to chapter 47.24 RCW where incorporated cities or towns are the permitting authority. Permit applications received after adoption of this chapter, but before the classification of a highway segment is adopted, shall be reviewed for consistency with the interim standards. After a highway segment has been classified pursuant to this chapter, the standards described for that particular class shall supersede the interim standards for the classified highway segment.

(7) Corner clearance. Corner clearances for connections shall meet or exceed the minimum connection spacing requirements of the interim standards, or of the applicable access class where the highway segment has been assigned a classification. A single connection may be placed closer to the intersection, pursuant to the permit application process specified in chapter 468-51 WAC, and in accordance with the following criteria:

(a) If, due to property size, corner clearance standards of this chapter cannot be met, and where joint access meeting or exceeding the minimum corner clearance standards cannot be obtained, or is determined by the department to be not feasible because of conflicting land use or conflicting traffic volumes or operational characteristics, then the following minimum corner clearance criteria may be used:

*For Access Class 5 and for speeds less than thirty-five mph, one hundred twenty-five feet may be used.

(b) In cases where connections are permitted under the above criteria, the permit issued pursuant to chapter 468-51 WAC shall contain the following additional conditions:

(i) There shall be no more than one connection per property frontage on the state highway.

(ii) When joint or alternate access meeting or exceeding the minimum corner clearance standards becomes available, the permittee will close the permitted connection, unless the permittee shows to the department's satisfaction that such closure is not feasible.

WAC 468-52-050 Application of access control classification system standards. (1) Review of permits on classified highway segments.

Connection permit applications on controlled access facilities of the state highway system received on a particular segment that has been classified in accordance with this chapter shall be reviewed subject to the requirements of this chapter pursuant to the permit application process specified in chapter 468-51 WAC. (2) Prior approvals. Connections permitted prior to the adoption of this chapter and unpermitted connections that do not require closure in accordance with WAC 468-51-030 are not required to meet the interim standards or the standards of assigned access classifications adopted pursuant to this chapter. (3) New permits required by chapter 468-51 WAC. All new connection permits required due to significant changes in property site use pursuant to WAC 468-51-110, or permit modification pursuant to WAC 468-51-120 shall be reviewed subject to the requirements of this chapter. (4) Permits approved under interim standards. Connection permits issued in accordance with the interim standards in WAC 468-52-040 on a highway segment where an access classification has not been adopted shall remain in effect after adoption of an access classification on that highway segment unless a new permit is required due to changes in property site use pursuant to WAC 468-51-110 or unless permit modification, revocation, or closure of the permitted connection is required pursuant to WAC 468-51-120. (5) Nonconforming permits. Nonconforming permits may be issued in accordance with WAC 468-51-100 for certain connections not meeting the interim standards in WAC 468-52-040 or the access classification location and spacing standards adopted for a particular highway segment.

WAC 468-52-060 Assignment of access control classifications to highway segments. The assignment of an access control classification to all controlled access segments of the state highway system shall be the responsibility of the department. The process to be followed in assigning the classifications is as follows: (1) Defining segments. The determination of the length and termini

of segments shall be the responsibility of the department working in cooperation with the Regional Transportation Planning Organizations, Metropolitan Planning Organizations, and the appropriate local governmental entities. (a) Segments of highways to be assigned to a particular access control classification shall be defined by the department in cooperation with local governments. The length and termini of segments shall take into consideration the mobility and access needs of the traveling public, the access needs of the existing and proposed land use abutting the highway segment, and the existing and desired mobility characteristics of the roadway. The number of classification changes occurring along a particular highway shall be minimized to provide highway system continuity, uniformity, and integrity to the maximum extent feasible. The segments shall not necessarily be confined by local jurisdictional boundaries. Points of transition between classifications along a particular route should be located on boundaries, or coincident with identifiable physical features. (2) Assignment of classifications. All segments of all controlled access facilities on the state highway system shall be assigned to one of the access control classes one through five. The assignment of a classification to a specific segment of highway shall be the responsibility of the department. The classification shall be made in cooperation with the Regional Transportation Planning Organization, Metropolitan Planning Organization, and the appropriate local governmental entities. For city streets that are designated as state highways pursuant to chapter 47.24 RCW, the department will obtain concurrence in the final class assignment from the city or town for those state highways where the city or town is the permitting authority. The assignment of a classification shall take into consideration the following factors: (a) Local land use plans, zoning, and land development regulations as set forth in adopted comprehensive plans; (b) The current and potential functional classification of the highway; (c) Existing and projected future traffic volumes; (d) Existing and projected state, local, and metropolitan planning organization transportation plans and needs including consideration of new or improved parallel facilities; (e) Drainage requirements; (f) The character of the lands adjoining the highway; (g) The type and volume of traffic requiring access; (h) Other operational aspects of access, including corridor accident history; (i) The availability of reasonable access to the state highway by way of county roads or city streets as an alternative to a connection to the state highway; (j) The cumulative effect of existing and projected connections on the state highway system's ability to provide for the safe and efficient movement of people and goods within the state. (3) Changes in jurisdiction. When the boundaries of an incorporated city or town are revised to include a portion of a controlled access state highway resulting in a change in the permitting authority from the department to the city or town in accordance with chapter 47.24 RCW, the access classification of that portion of the state highway shall remain unchanged unless modified in accordance with WAC 468-52-070.

WAC 468-52-070 Review and modification of classifications. (1)

Department initiated action. The department may, at any time, initiate a review of the access control classification of any segment of any state highway. When a major change occurs in any of the factors noted in WAC 468-52-060(2), the department shall review the access classification for the specific segments of any state highway affected by the change. Prior to the initiation of any change in classification of a highway segment, the department shall notify in writing the appropriate Regional Transportation Planning Organization, Metropolitan Planning Organization, and local governmental entities. The department will consult with the RTPO, MPO, and local governmental entities and shall take into consideration, any comments or concerns received during the review process. For city streets that are designated as state highways pursuant to chapter 47.24 RCW, the department will obtain concurrence in the final class assignment from the city or town for those state highways where the city or town is the permitting authority. The department shall notify the RTPO, MPO, and local governmental entities in writing of the final determination of the reclassification action. (2) Requests for departmental review. A Regional Transportation Planning Organization, Metropolitan Planning Organization, or local governmental entity may request, in writing, at any time that the secretary of transportation initiate a review of the access control classification of a specific segment or segments of a state highway(s). Such written request shall identify the segment(s) of state highway for which the review is requested and shall include a specific recommendation for the reclassification of the highway segment(s) involved. Justification for the requested change shall be provided in the request taking into account the standards and criteria in WAC 468-52-040 and 468-52-060. The department will consult with the RTPO, MPO, and local governmental entities involved and shall take into consideration, any comments or concerns received during the review process. The department shall notify the RTPO, MPO, and local governmental entities in writing of the final determination of the reclassification action. Other interested persons or organizations who wish to initiate a review of the access control classification of a specific highway segment shall do so through the local governmental entity, MPO, or RTPO.

Glossary of Terms & Abbreviations

Activity Center - A major concentration of employment and commercial activity which may be found in suburban areas as well as in the downtown areas.

Alignment - The specific path a highway will take between two designated points within a corridor.

Americans with Disabilities Act of 1990 (ADA) - mandates changes in building code, transportation services and facilities and hiring practices to prevent discrimination against persons with disabilities.

Average Daily Traffic (ADT) - The average number of vehicles that pass a specified point during a 24 hour period.

Capacity - Maximum number of vehicles (vehicular capacity) or persons (person capacity) that can pass over a given section of roadway in one or both directions during a given period of time under a prevailing environmental, roadway and roadway user conditions, usually expressed as vehicles per hour or persons per hour.

Channelization - The separation or regulation of conflicting traffic movements into definite paths of travel by use of pavement markings, raised islands or other means.

Collector/Distributor - A collector provides the primary access to a minor arterial for one or more neighborhoods or non-residential areas. Collectors/distributors move traffic to and from the arterial system. They provide a limited amount of travel through neighborhoods and non-residential areas which originates and terminates externally. Collectors/distributors provide direct connections to local roads and minor collectors. They provide collection and distribution routes for public transit systems. Trip length on a collector/distributor is generally between 2 and 10 miles.

Comprehensive Plan - Developed by town, city and county jurisdictions to manage their future growth and economy while protecting the environment. Individual elements of most comprehensive plans include; Land Use, Transportation, Housing, Capital Facilities, Utilities, Economic Development and the Environment.

Corridor - One of several general paths which a highway can take to satisfy the route requirements and which has one or more specific alignment alternatives. A corridor can include, as a whole or in part, any existing state highway facility, county highway facility, city street, new alignments or any combination of these

Directional Design Hour Volume (DDHV) - The traffic volume for the design hour in the peak direction of flow usually a forecast of the relevant peak hour volume, in vehicles per hour.

Design Hour Volume (DHV) - The traffic volume for the design hour, in vehicles per hour.

Design Speed - The maximum safe speed when conditions are so favorable that the design features of the highway govern.

Design Year - The year for which a project is designed. In transportation projects the design year is typically taken to be 20 years from the time of construction. Using the traffic volumes estimated in the future allows engineers to design the project to meet those predicted needs. In effect the design life of the project is taken to be 20 years. What actually happens in the future may differ from predictions.

Divided Highway - A highway with separated roadbeds for traffic in opposing directions.

Full Access Intersection - An intersection that provides for both left and right turning movements for vehicles entering the intersection from any direction.

Grade - The rate of ascent or descent of a roadway, expressed as a percent; the change in roadway elevation per unit of horizontal length.

Horizontal Alignment - The straight lines (tangents) and curves of the road.

High Occupancy Vehicle (HOV) - High Occupancy Vehicle. Typically any vehicle that carries more than one person is called an HOV (High Occupancy Vehicle). HOV may sometimes be defined as carrying 3 or more persons.

High Occupancy Vehicle Lane - High Occupancy Vehicle Lane. Reserved for use by high occupancy vehicles (HOVs) either all day or during specified periods (e.g. during the peak hours). An HOV for the purpose of the lane may be a bus, carpool, vanpool or motorcycle.

Intersection Improvements - provide obstruction-free sight triangles (often achieved through slope flattening, selective clearing or both), eliminate skews where possible, separate grades where possible, illumination and other enhancements to improve the safety characteristics of the intersection which may have the desirable collateral effect of improving the transportation characteristics of the intersection.

Lane - A portion of a street or highway, usually indicated by pavement markings, that is intended for one line of vehicles.

Level of Service (LOS) - The level of service is a measure of how well a transportation facility is serving the volume of vehicles using it. A descriptive measure of the quality and quantity of transportation service provided to users. Quantifiable characteristics such as travel time, travel cost, number of transfers etc. are considered.

Median - The portion of a divided highway separating the traveled ways for traffic in opposite directions.

Metropolitan Planning Organization (MPO) - MPOs, were organized after passage of the 1962 Federal Highway Act which first formally legislated cooperation between state DOTs and local communities in urban areas. The 1991 ISTEA greatly expanded MPO authority. MPOs have the authority to allocate federal funds coming into their regions through the Surface Transportation Program (STP) and Congestion Mitigation and Air Quality (CMAQ) Program.

The MPO is responsible for regional transportation planning in an urbanized area. Members are designated by the governor and local elected officials.

Milepost (MP) - A sequential number, in designated direction of travel, of 1/100 mile increments along a State Route.

Minor Arterial - Minor arterials provide access to the principal arterial and freeway system. They provide a lower level of travel mobility than principal arterials to major communities within a county. They provide primary access to or through communities of high density residential, commercial or retail or industrial land areas. They provide access to abutting properties at pre-determined locations. Trip length on minor arterials generally exceeds five miles. Minor arterials provide routes for public transit systems between major communities within a county.

Mobility - Capable of moving from one place to another. As congestion increases, mobility decreases.

Objectives - Specific, measurable statements related to the attainment of goals.

Office of Urban Mobility (OUM) - An office within WSDOT

Park-and Ride-Lot - A transit, carpool and/or vanpool facility where people can park their auto and then ride transit or join a carpool or vanpool to work.

Preemption of Signals - A system whereby specific vehicles, such as buses or emergency vehicles, are given preference at traffic signals in order to speed their movement.

Queue - A line of people or vehicles.

Revised Code of Washington (RCW)

Route Development Plan (RDP)

Right-of-way - Land owned by the state for the purposes of highway and transportation facility construction and operation.

Sight Distance - Minimum distance necessary for a driver to see conflicting traffic and take the action necessary to avoid colliding with that traffic.

Single Occupant Vehicle (SOV) - a vehicle carrying only the driver.

State Environmental Policy Act (SEPA)

State Route (SR)

Superelevation Rate - The rate of rise in cross-section of the finished surface of a roadway on a curve, measured from the lowest or inside edge to the highest or outside edge.

System Plan - Provide service objectives and action strategies for maintaining, operating, preserving and improving our state highways.

Transit - Passenger transportation that is available to any person who pays a prescribed fare. Operating on established schedules along fixed routes and designated stops, transit is designed to move relatively large groups of people at one time.

Transit Center (transit station) - A mode transfer facility serving transit buses and other modes such as automobiles, bicycles and pedestrians.

Travel Demand Management (TDM) - refers to the policies, programs and actions implemented to increase the use of High Occupancy Vehicles (public transit, carpooling and vanpooling) and non-motorized transportation and/or spread the timing of travel to less congested time periods through alternate work-hour programs.

Transportation System Management (TSM) - improves the flow of traffic through traffic signal synchronization, freeway on-ramp signals, the construction of high-occupancy-vehicle (HOV) lanes, left turn restrictions and other measures.

Transportation Information and Planning Support (TRIPS)

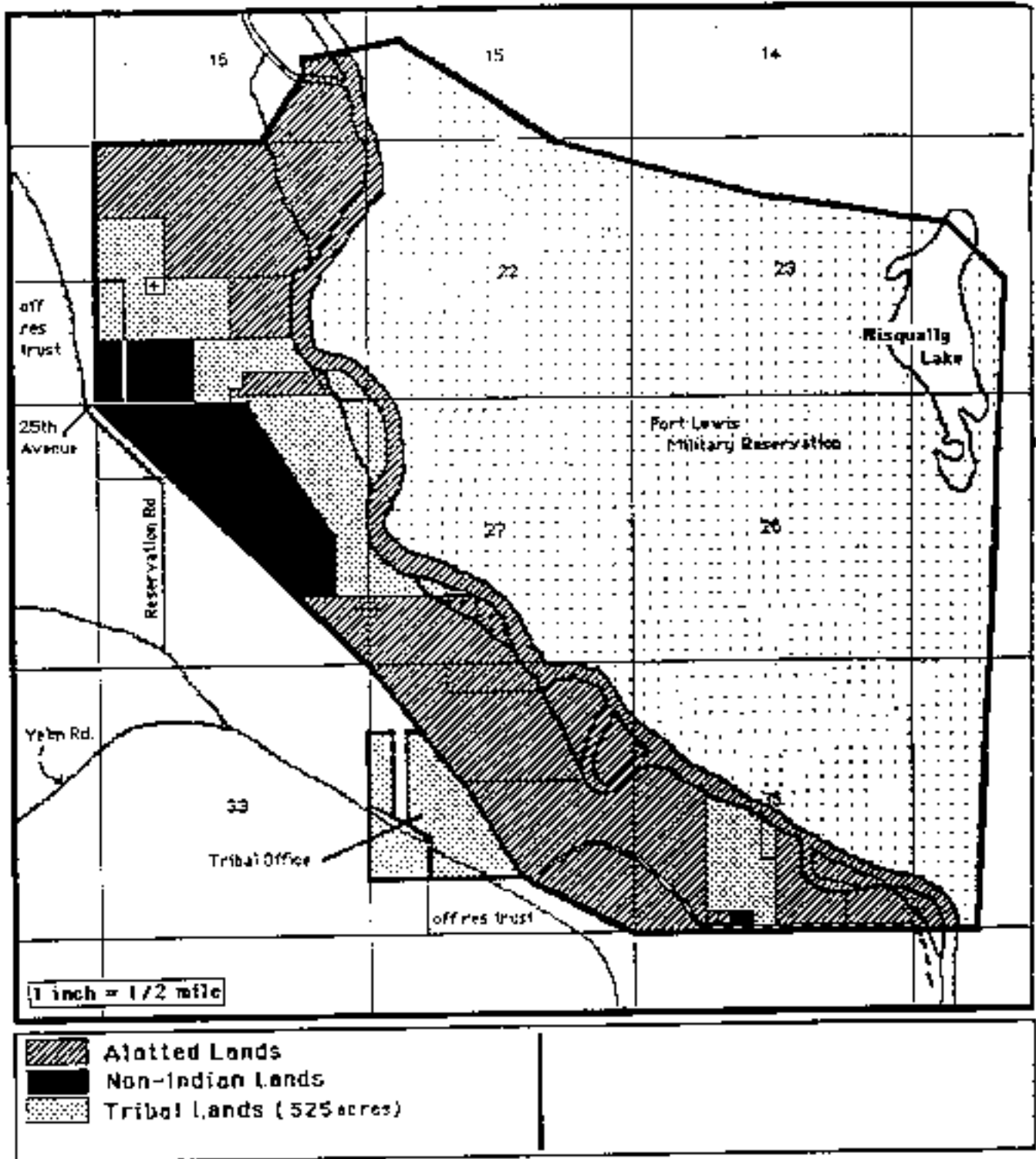
Two-way Left-Turn Lane (TWLTL)

Urban Growth Area (UGA)

Vertical Alignment - The grades the road takes as it passes over terrain. Typically the vertical alignment attempts to use the natural contours and geography of the area.

Washington Administrative Code (WAC)

Washington State Department of Transportation (WSDOT)



LAND OWNERSHIP SUMMARY 1995 NISQUALLY INDIAN RESERVATION

Township 18 North
Range 1 East, W.M.



- City of Lacey. Comprehensive Plan. 1994.
- City of Yelm. Comprehensive Transportation Plan. August 1992.
- Thurston County. Comprehensive Plan and Related Documents. 1995.
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